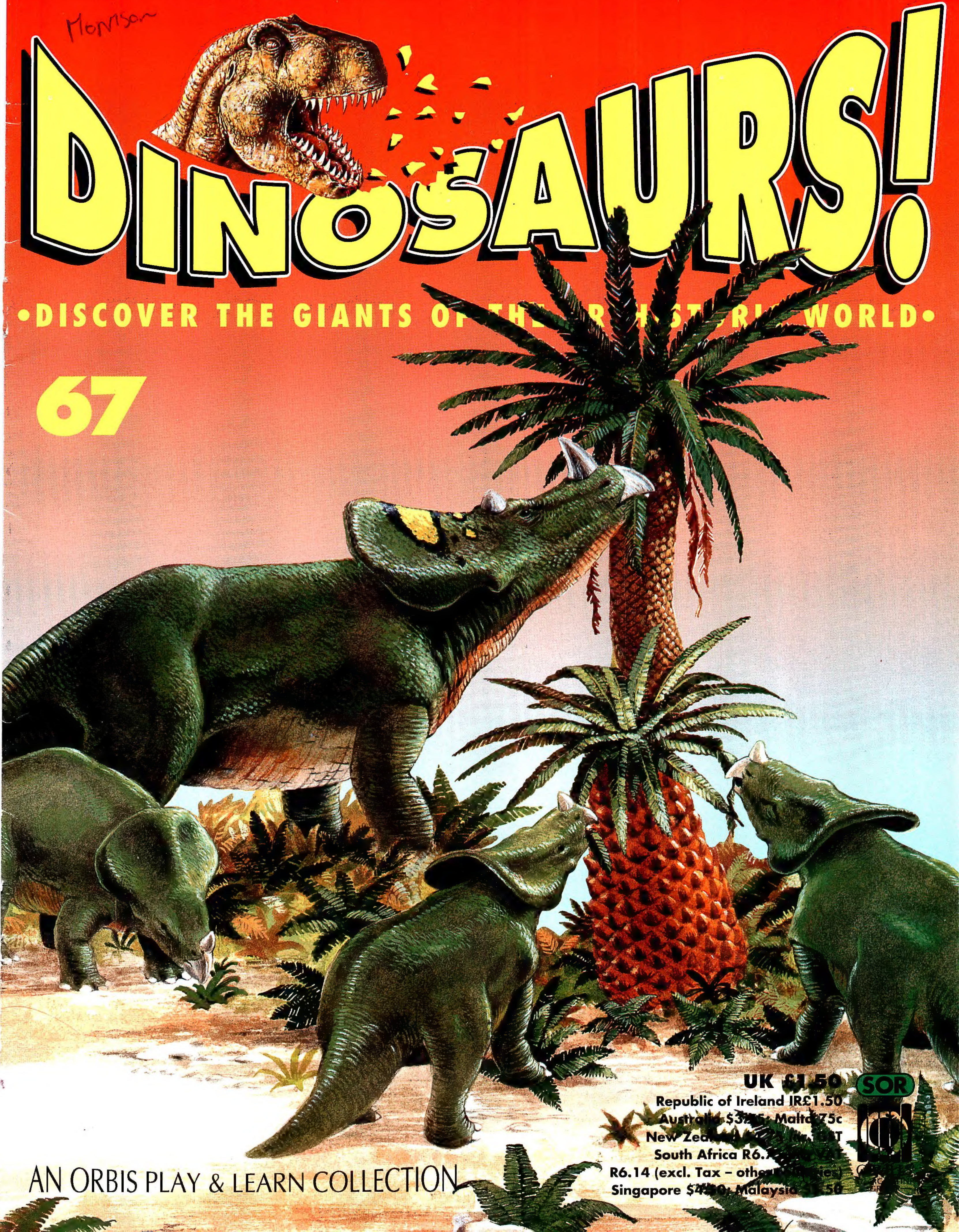
Morrison



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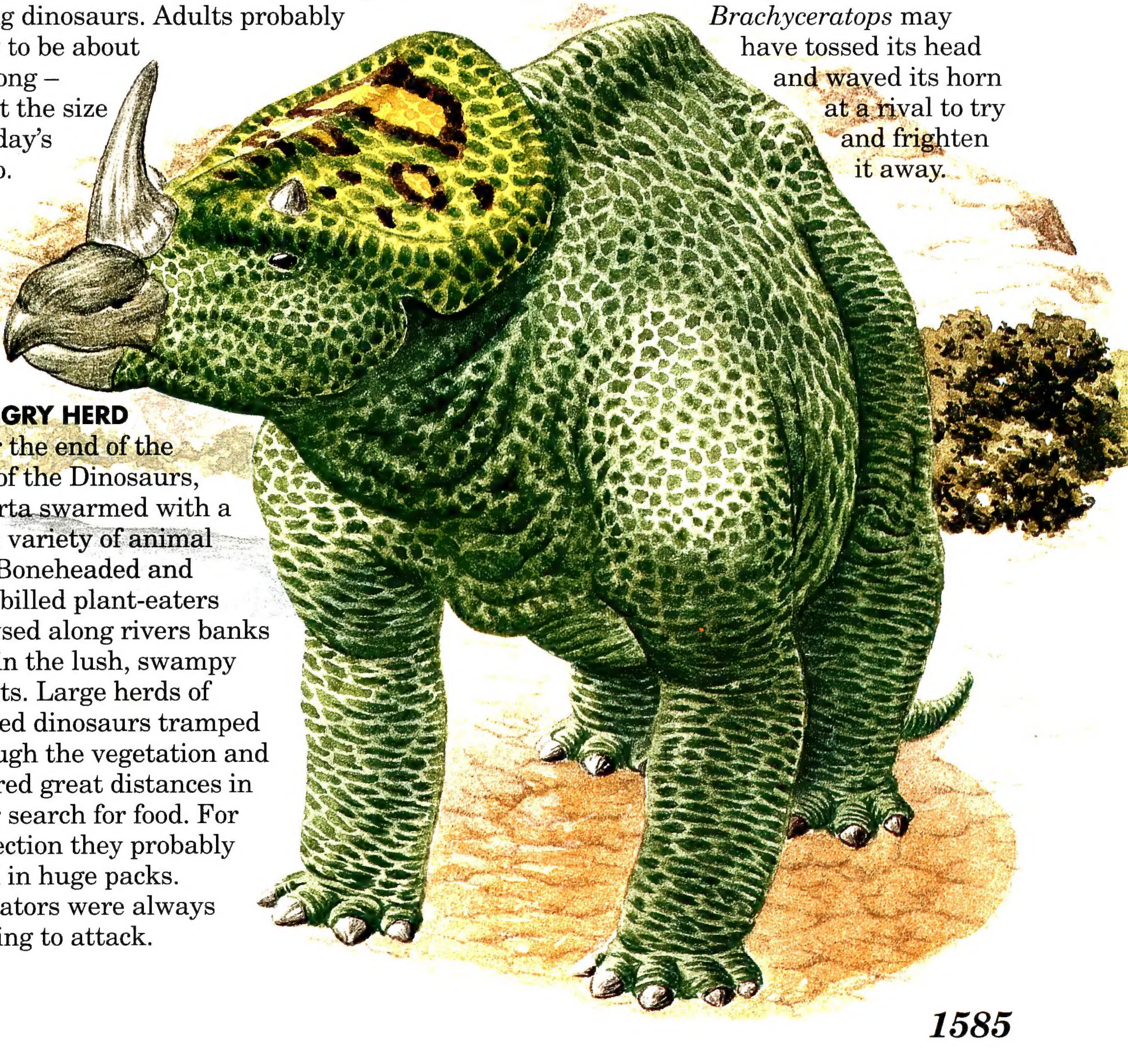
BRACHYCERATOPS

No trace of a fully grown *Brachyceratops* has yet been found.

Five or six skeletons of this horned plant-eater have been found in Alberta, Canada and Montana, USA. But these all belong to young dinosaurs. Adults probably grew to be about 4m long – about the size of today's rhino.

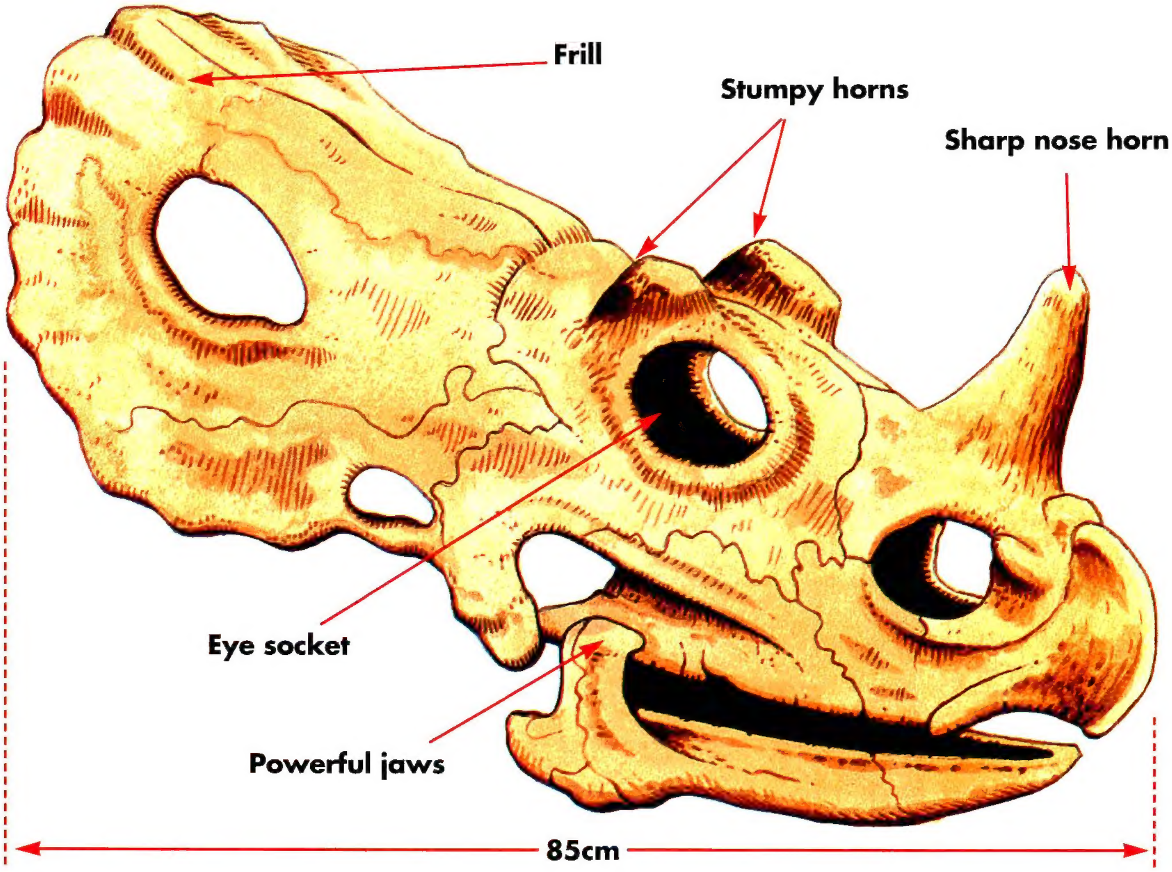
SENDING SIGNALS

Brachyceratops had a short face with a horn which curved upwards from its nose. The sharp point of the horn could inflict a fatal wound if it pierced the body of another dinosaur. Within a herd, the nose horn was probably also a sort of 'flag' that helped animals to recognise each other. *Brachyceratops* may have tossed its head and waved its horn at a rival to try and frighten it away.



HUNGRY HERD

Near the end of the Age of the Dinosaurs, Alberta swarmed with a huge variety of animal life. Boneheaded and duckbilled plant-eaters browsed along rivers banks and in the lush, swampy forests. Large herds of horned dinosaurs tramped through the vegetation and covered great distances in their search for food. For protection they probably lived in huge packs. Predators were always waiting to attack.



Brachyceratops had a sharp horn on its nose and two small stumpy horns above its eyes. It had a very impressive frill around its neck, and strong jaws for munching up tough plants.

SHOWING OFF

Like other ceratopians, *Brachyceratops* had a distinctive neck frill. When it dropped its head forward the frill stood up and could be seen more clearly. By nodding its head up and down and swinging it from side to side, *Brachyceratops* used its frill to warn off rivals and predators, and probably to attract females.

Is it true that ceratopians were once mistaken for buffaloes?

Yes. When Othniel Charles Marsh was shown the remains of some large, bony horns discovered in Colorado, USA, at the end of the last century, he thought they belonged to an extinct buffalo. He even named them *Bison alticornis* which means 'high-horned buffalo'. These were, in fact, the remains of the well-known horned dinosaur *Triceratops*.

BROW HORNS

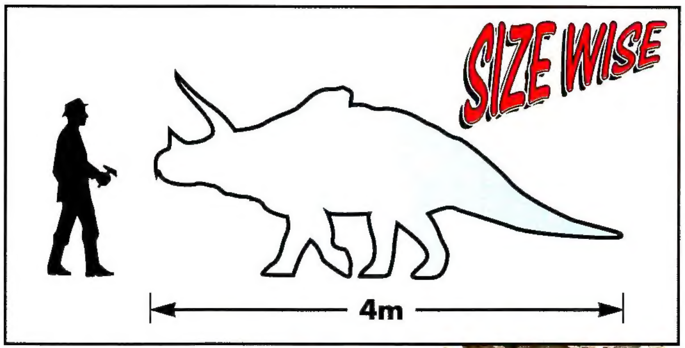
Several *Brachyceratops* skulls have been found. One skull was badly shattered and had to be carefully restored, like fragments of a precious vase. The skulls show *Brachyceratops* had a tiny stumpy horn above each eye.

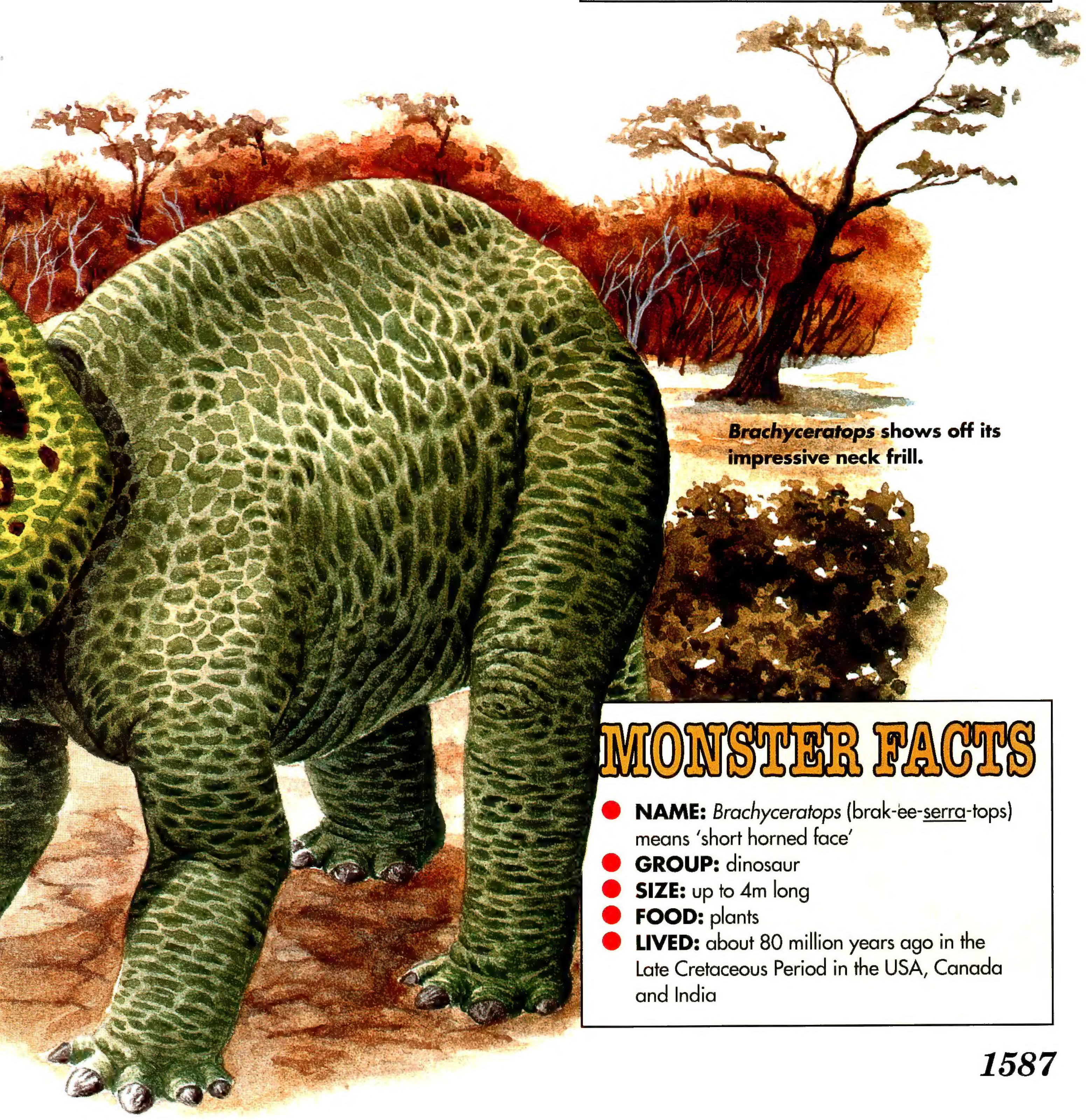
BIG BUT NIMBLE

Brachyceratops walked on broad feet, which helped to support its weight when it wandered through muddy swamps. In spite of its size, *Brachyceratops* moved quite nimbly, especially when it was being chased by a predator.

WHEN THE CHEWING GETS TOUGH...

Brachyceratops found tough plants as tempting as lush shoots. It was able to nip off stems with its narrow beak and let its powerful jaws munch them to a digestible pulp. Deep in its cheeks, rows of slicing teeth worked like a pair of scissors to shred up the food.





Brachyceratops **shows off its impressive neck frill.**

MONSTER FACTS

- **NAME:** *Brachyceratops* (brak-ee-serra-tops) means 'short horned face'
- **GROUP:** dinosaur
- **SIZE:** up to 4m long
- **FOOD:** plants
- **LIVED:** about 80 million years ago in the Late Cretaceous Period in the USA, Canada and India

ERYOPS

Slow and clumsy *Eryops* was an early amphibian that lived on land.

Eryops lumbered around the swamps and lakes of North America over 250 million years ago. Amphibians evolved from fish. The fins developed into feet and early amphibians learnt to breathe air. *Eryops* was probably able to gulp in air like a frog and so could live out of the water for most of the time.

BIG-HEADED

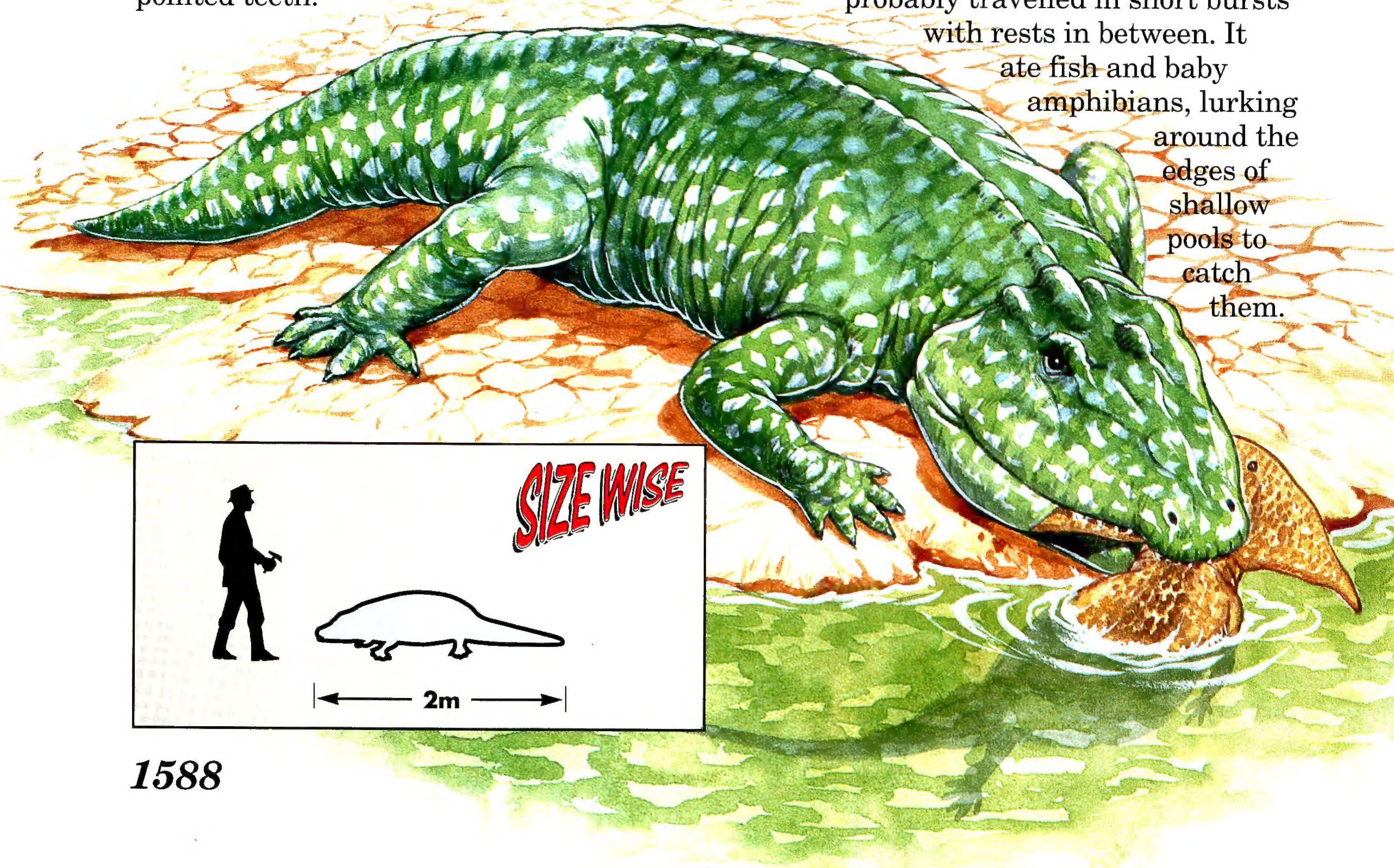
Eryops had a large, low head which took up one quarter of its whole body length. Its wide jaw was lined with many small, pointed teeth.

MONSTER FACTS

- **NAME:** *Eryops* (er-ee-ops) means 'draw face'
- **GROUP:** amphibian
- **SIZE:** up to 2m long
- **FOOD:** fish and small amphibians
- **LIVED:** about 250 million years ago in the Early Permian Period in Texas, Oklahoma and New Mexico, USA

LOW-SLUNG BODY

Like crocodiles today, *Eryops* had a long body which needed the support of strong limbs. It walked with its arms and legs held at right angles. *Eryops* was able to hold its body clear of the ground and probably travelled in short bursts with rests in between. It ate fish and baby amphibians, lurking around the edges of shallow pools to catch them.



CONCHORAPTOR

Like *Oviraptor, Conchoraptor* probably enjoyed a crunchy lunch.

The fossils of this unusual bird-like dinosaur were discovered in the dry desert landscape of southern Mongolia. *Conchoraptor* had slender legs and good eyesight, which came in useful when evading predators.

GRAB AND SMASH

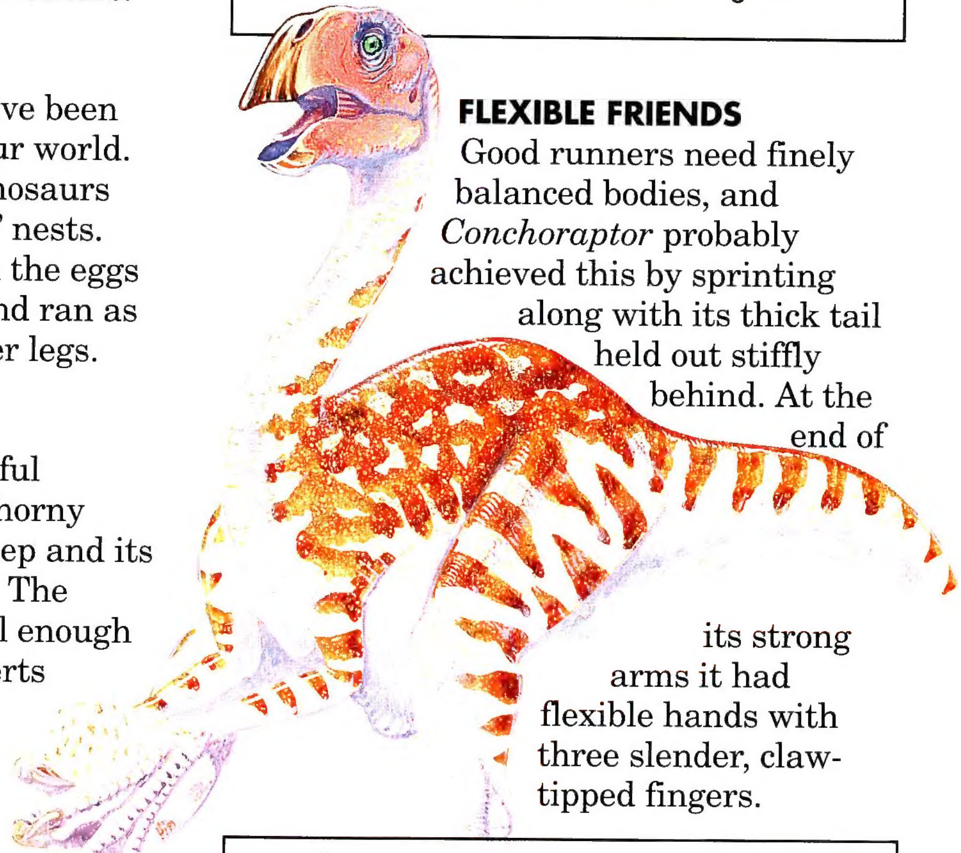
Conchoraptor and *Oviraptor* have been named as thieves of the dinosaur world. There is evidence that these dinosaurs stole eggs from other dinosaurs' nests. *Conchoraptor* probably grabbed the eggs with its long, grasping hands and ran as fast as it could on its two slender legs.

CRACKING SUCCESS

One of *Conchoraptor's* most useful features was its tough, curved, horny beak. Its head was short and deep and its jaw opened wide to hold an egg. The strength of its bite was powerful enough to crack the thickest shell. Experts are not quite sure what else it ate but it is possible that *Conchoraptor* enjoyed molluscs and plants as well.

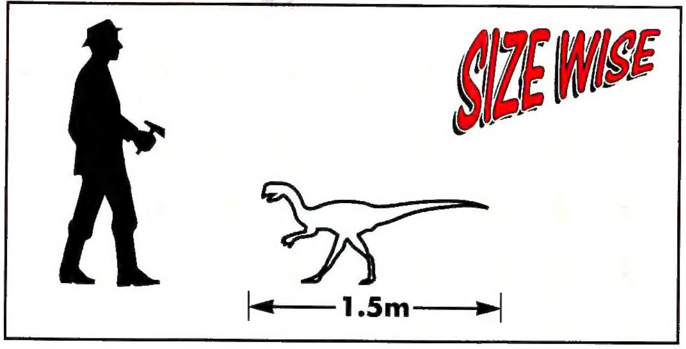
MONSTER FACTS

- **NAME:** *Conchoraptor* (kon-koh-rap-tor) means 'conch thief'
- **GROUP:** dinosaur
- **SIZE:** up to 1.5m long
- **FOOD:** molluscs, plants and eggs
- **LIVED:** about 75 million years ago in the Late Cretaceous Period in southern Mongolia



FLEXIBLE FRIENDS

Good runners need finely balanced bodies, and *Conchoraptor* probably achieved this by sprinting along with its thick tail held out stiffly behind. At the end of its strong arms it had flexible hands with three slender, claw-tipped fingers.



The tale of the

The great whales, sea-cows and seals are mammals that have lived in the sea for millions of years.

The first four-limbed animals on land were the amphibians, which evolved from fishes. Over millions of years amphibians evolved into reptiles and reptiles evolved into mammals. After the death of the dinosaurs, mammals took over the land. Then, about 50 million years ago, a strange thing happened. Some mammals returned to the water.

MAMMALS IN THE SEA

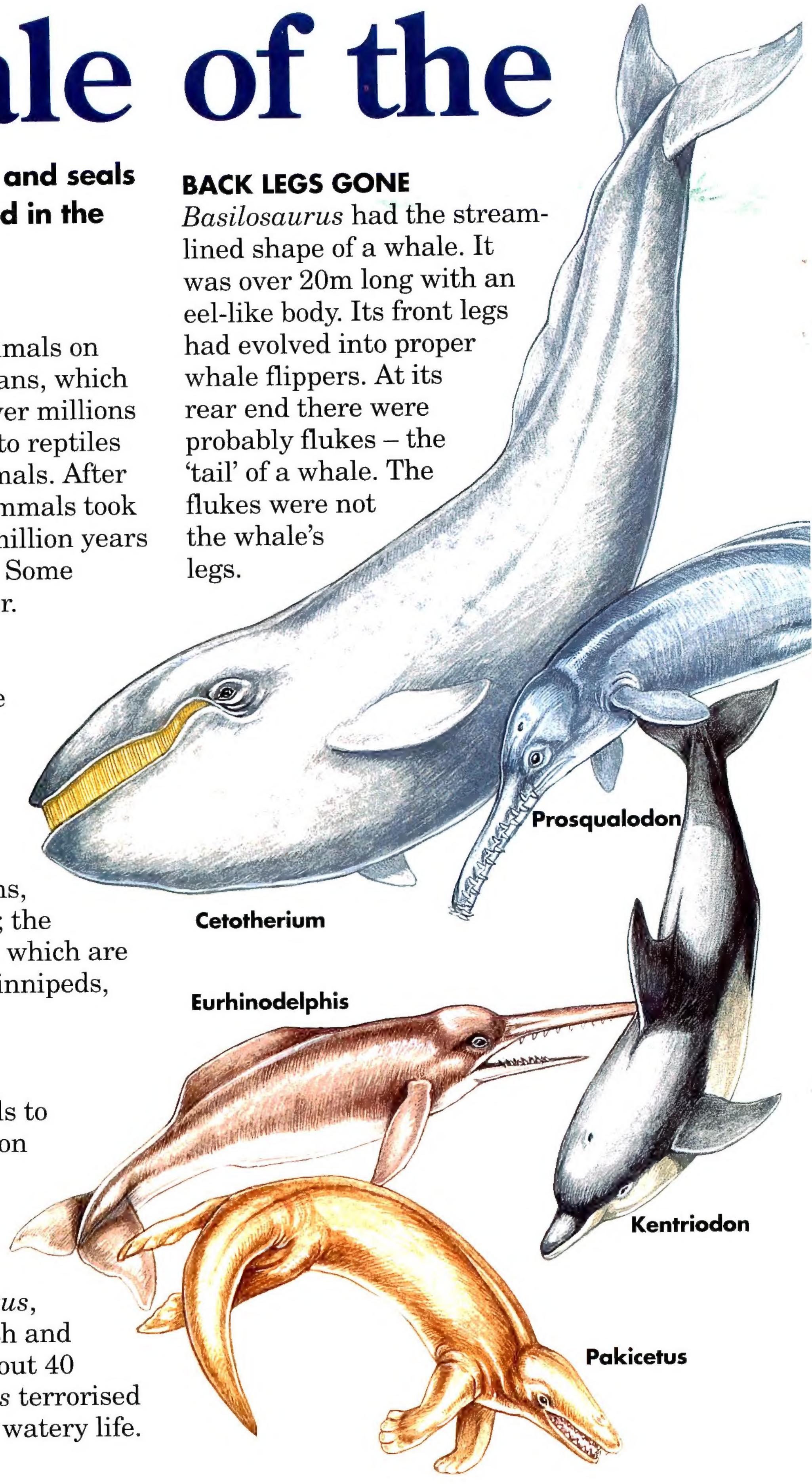
Like mammals on land, marine (sea) mammals are warm-blooded, breathe air and feed their babies on milk. But they are completely at home in the sea. There are three groups of marine mammals: the cetaceans, including whales and dolphins; the sirenians, including manatees, which are also called sea-cows; and the pinnipeds, including seals and sea-lions.

WEBBED-FEET WHALE

Whales were the first mammals to return to the sea, over 50 million years ago. The earliest, *Pakicetus*, probably looked like a large otter – 2m long with webbed feet on its four limbs. Next came *Protocetus*, which had huge, fearsome teeth and very small back legs. Then, about 40 million years ago, *Basilosaurus* terrorised the seas. It was fully fitted for watery life.

BACK LEGS GONE

Basilosaurus had the streamlined shape of a whale. It was over 20m long with an eel-like body. Its front legs had evolved into proper whale flippers. At its rear end there were probably flukes – the 'tail' of a whale. The flukes were not the whale's legs.



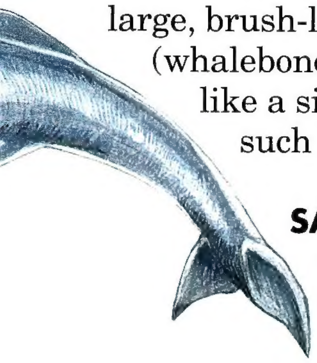
whale

LONG GONE

The rear limb bones of *Basilosaurus* had almost disappeared. They were tiny and hidden inside its body. These whales belonged to a group which has died out.

TEETH AND WHALEBONE

Today there are toothed whales, including killer whales and dolphins, and baleen whales, such as humpback whales and blue whales. The baleen whales have large, brush-like fringes of baleen (whalebone) in their mouths. These act like a sieve for filtering small food, such as krill, from the sea.



SAWS AND SWORDS

One of the first toothed whales was *Prosqualodon*. It lived about 35 million years ago, was about 2.4m long and looked like a dolphin with a saw on its nose! *Eurhinodelphis* had a fierce-looking, sword-shaped mouth lined with sharp teeth. It was an early dolphin, 2m long, from 25 million years ago.

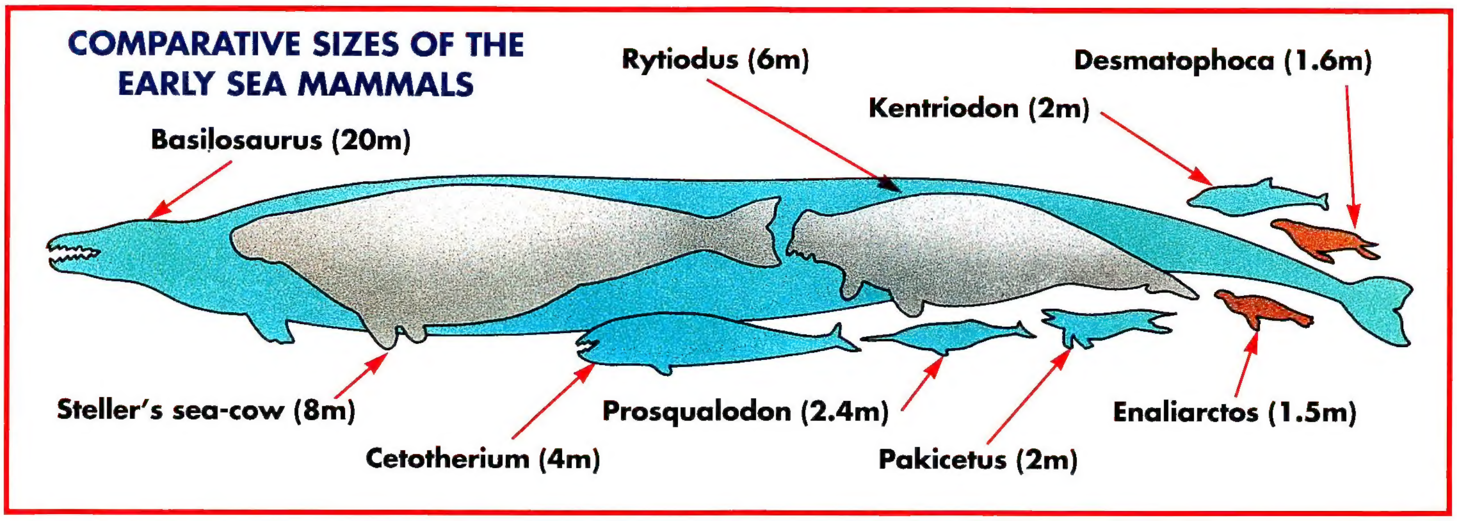
Is it true that whales breathe air?

Yes. The whale is a mammal, so it breathes air. It has a hole in the top of its head called a blowhole. It is a whale's nostril – the hole it breathes through. The whale can breathe air even when only a small part of its head is above the water. All whales today are designed like this. When a whale breathes out through its blowhole, the warm breath and water spray like a fountain into the ocean air. This is called the blow. Many years ago, sailors who spotted this fountain were known to cry: 'There she blows!'

MORE LIKE TODAY

By the Miocene Epoch, 15-10 million years ago, whales and dolphins looked very like they do today. *Cetotherium*, a baleen whale, was only 4m long but looked like today's Pacific grey whale. The grey whale is probably the most ancient design of whale still alive today.

By the Miocene Epoch dolphins, such as *Kentriodon*, looked much like dolphins do today.



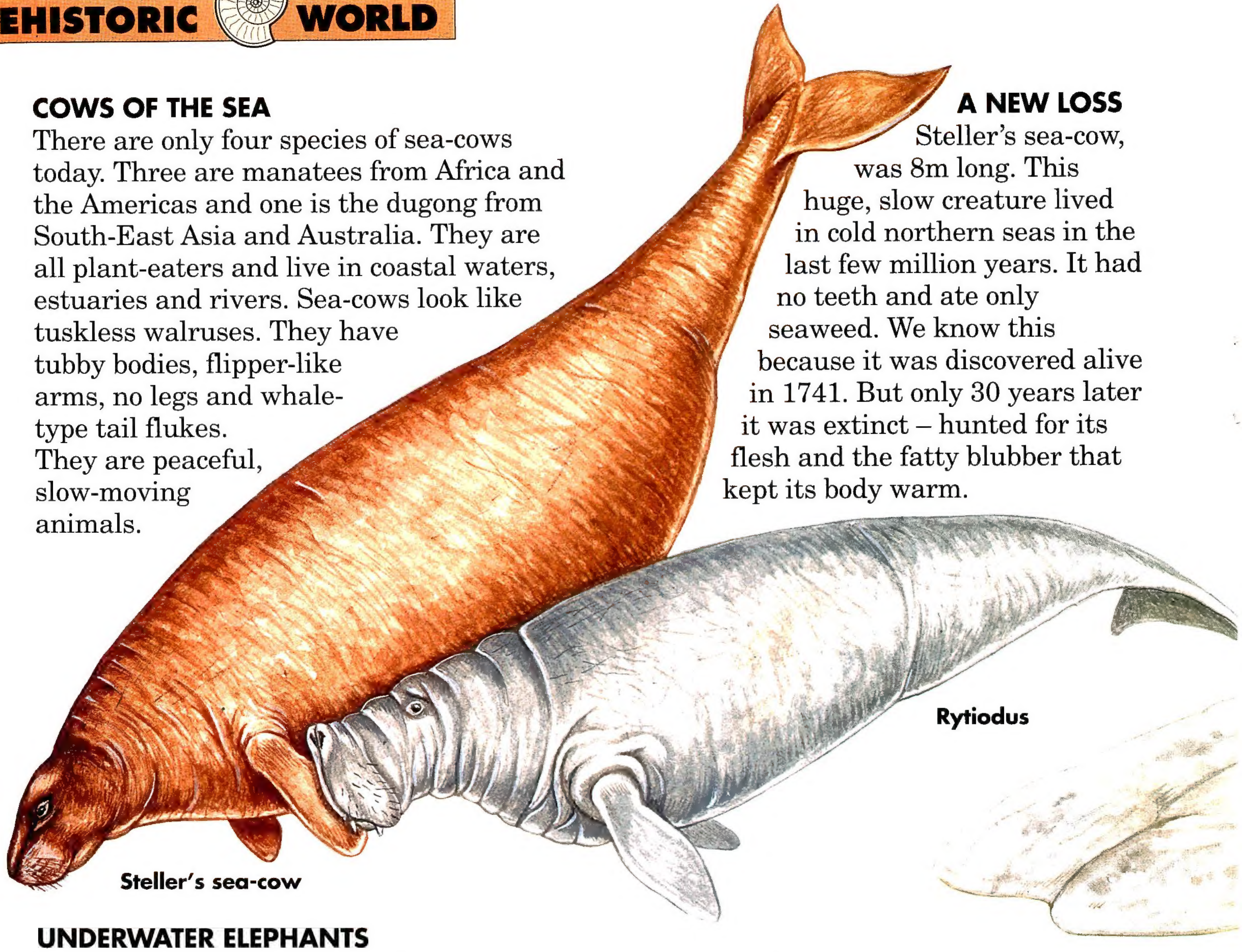
COMPARATIVE SIZES OF THE EARLY SEA MAMMALS

COWS OF THE SEA

There are only four species of sea-cows today. Three are manatees from Africa and the Americas and one is the dugong from South-East Asia and Australia. They are all plant-eaters and live in coastal waters, estuaries and rivers. Sea-cows look like tuskless walruses. They have tubby bodies, flipper-like arms, no legs and whale-type tail flukes. They are peaceful, slow-moving animals.

A NEW LOSS

Steller's sea-cow, was 8m long. This huge, slow creature lived in cold northern seas in the last few million years. It had no teeth and ate only seaweed. We know this because it was discovered alive in 1741. But only 30 years later it was extinct – hunted for its flesh and the fatty blubber that kept its body warm.



Rytiodus

Steller's sea-cow

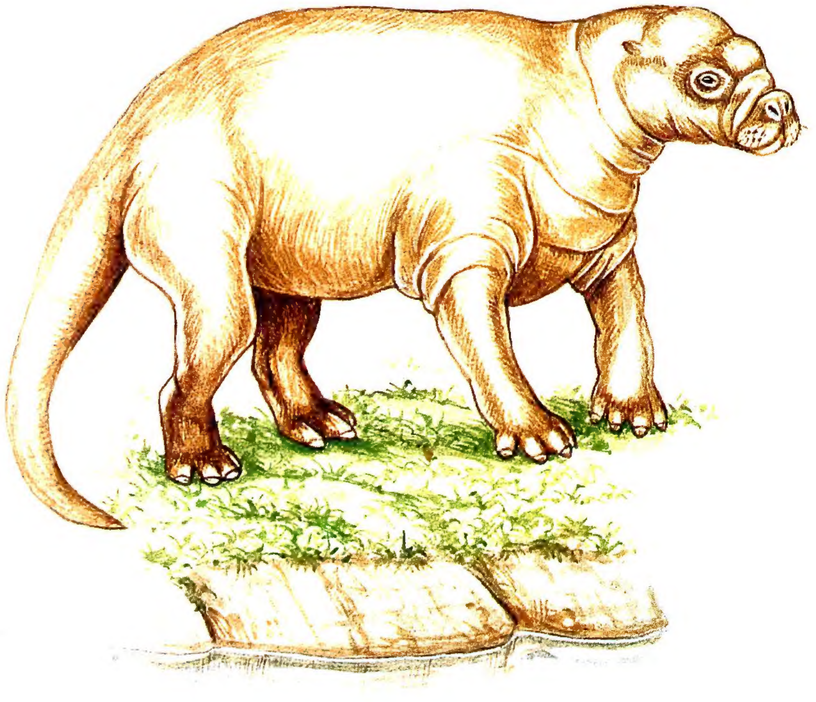
UNDERWATER ELEPHANTS

Sea-cows appeared in the early Eocene, just after the whales. Like cows on land, they grazed on plants. But their plants were the great underwater meadows of seagrasses that grew in the warm coastal waters. You might even call them sea-elephants since they may have evolved from the same ancestors as the elephants!

FEW REMAINS

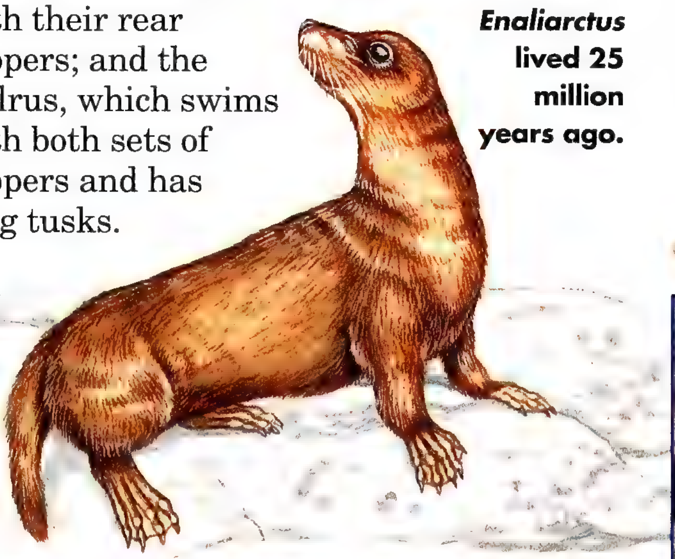
One of the first sea-cows was *Prorastomus*. Its fossils date back to the middle of the Eocene Epoch and suggest *Prorastomus* still had four legs and a long tail. By the time of *Rytiodus*, 40 million years ago, sea-cows looked much as they do today. *Rytiodus* was 2m longer than today's sea-cow and had tusks to grub up seabed roots.

Prorastomus

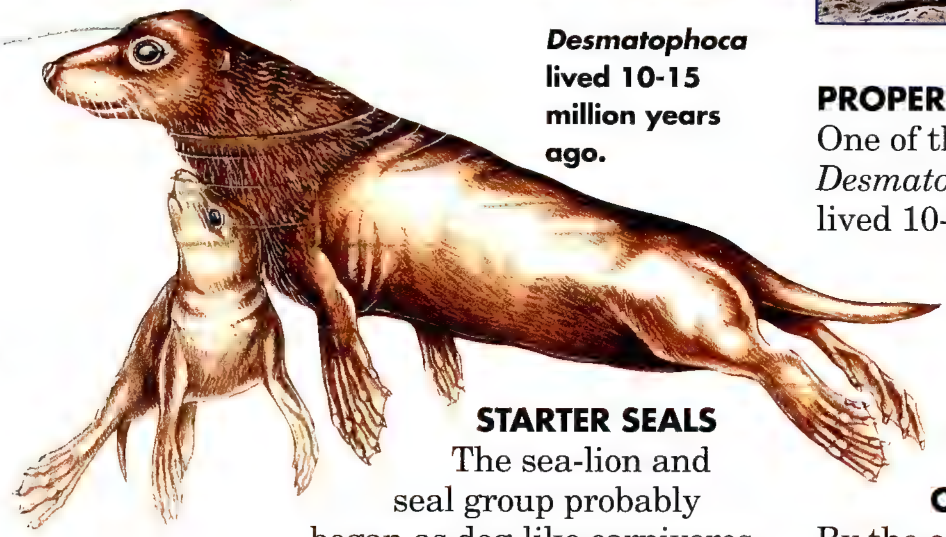


THE 'FLIPPER-FEET'

The third group of sea mammals is the pinnipeds, 'wing-footed' or 'flipper-feet'. They are fast, agile hunters with sharp, fish-gripping teeth and streamlined bodies. Their limbs have evolved into short, broad, webbed flippers. There are three main kinds today: the sea-lions and fur seals (eared seals), which swim with their front flippers; true seals (earless seals), which swim with their rear flippers; and the walrus, which swims with both sets of flippers and has long tusks.



***Enaliarctus* lived 25 million years ago.**



***Desmatophoca* lived 10-15 million years ago.**

STARTER SEALS

The sea-lion and seal group probably began as dog-like carnivores related to today's otters. Gradually, they took to life in the water, diving after fish along the coast. *Enaliarctos* was about 1.5m long and lived 25 million years ago. It was midway between an otter and a sea-lion – it had webbed feet and a tail.

IT'S A FACT

THAT SEA-COWS MAY BE MERMAIDS

Sea-cows sometimes lie in the sea with just their heads sticking up. They also make eerie noises that sound like humming and wailing. Sailors, scanning the horizon, may have mistaken a sea-cow for a singing woman with a fish-like tail. This may have started the mermaid legend!

Many millions of years ago, there were several species of elephant seal. Now there is only one.

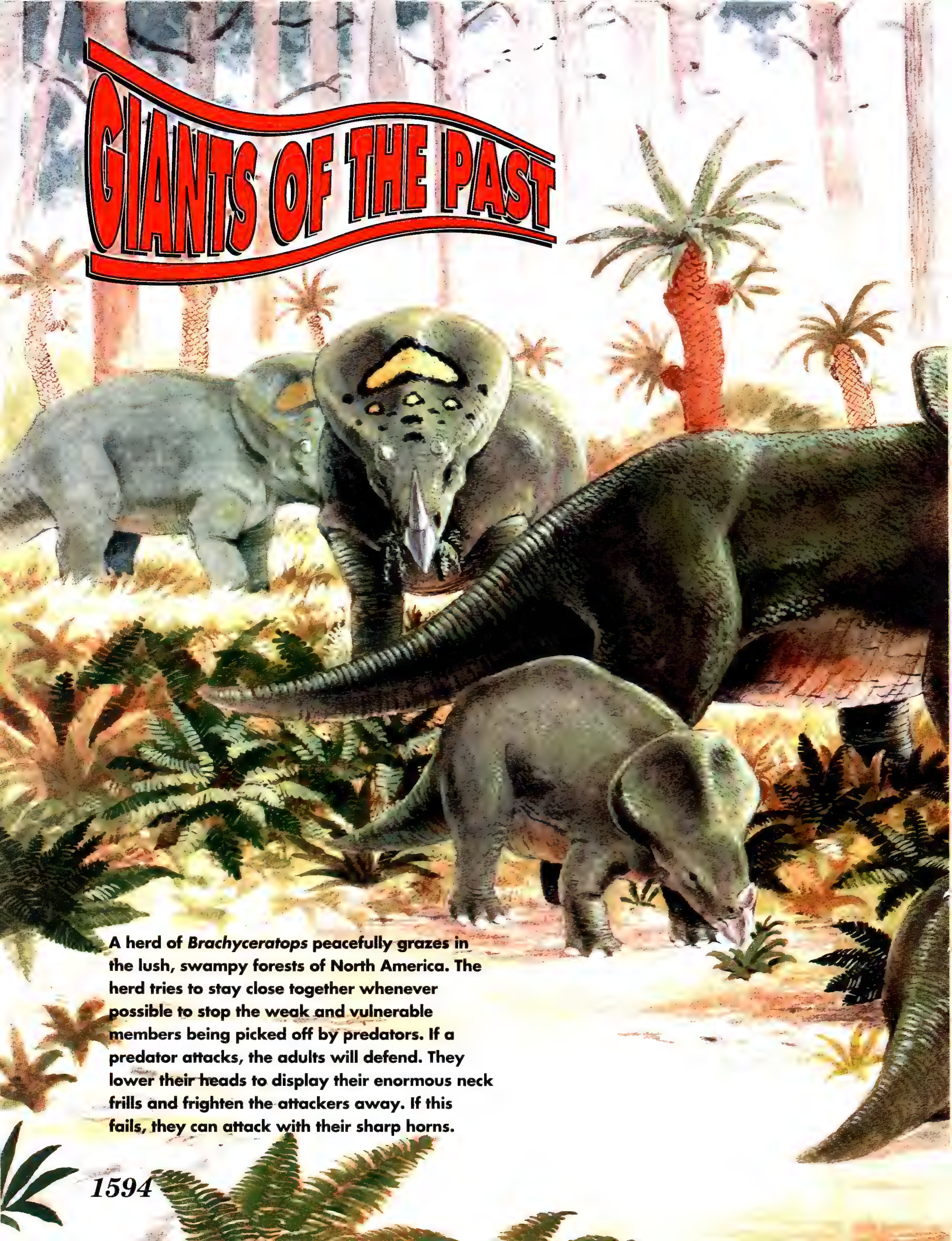
PROPER SEA-LIONS

One of the first proper sea-lions was *Desmatophoca*. It was about 1.6m long and lived 10-15 million years ago around the coasts of Asia and North America. *Allodesmus,* which lived at about the same time, was 5m long. It probably looked like today's elephant seals.

ONE WALRUS LEFT

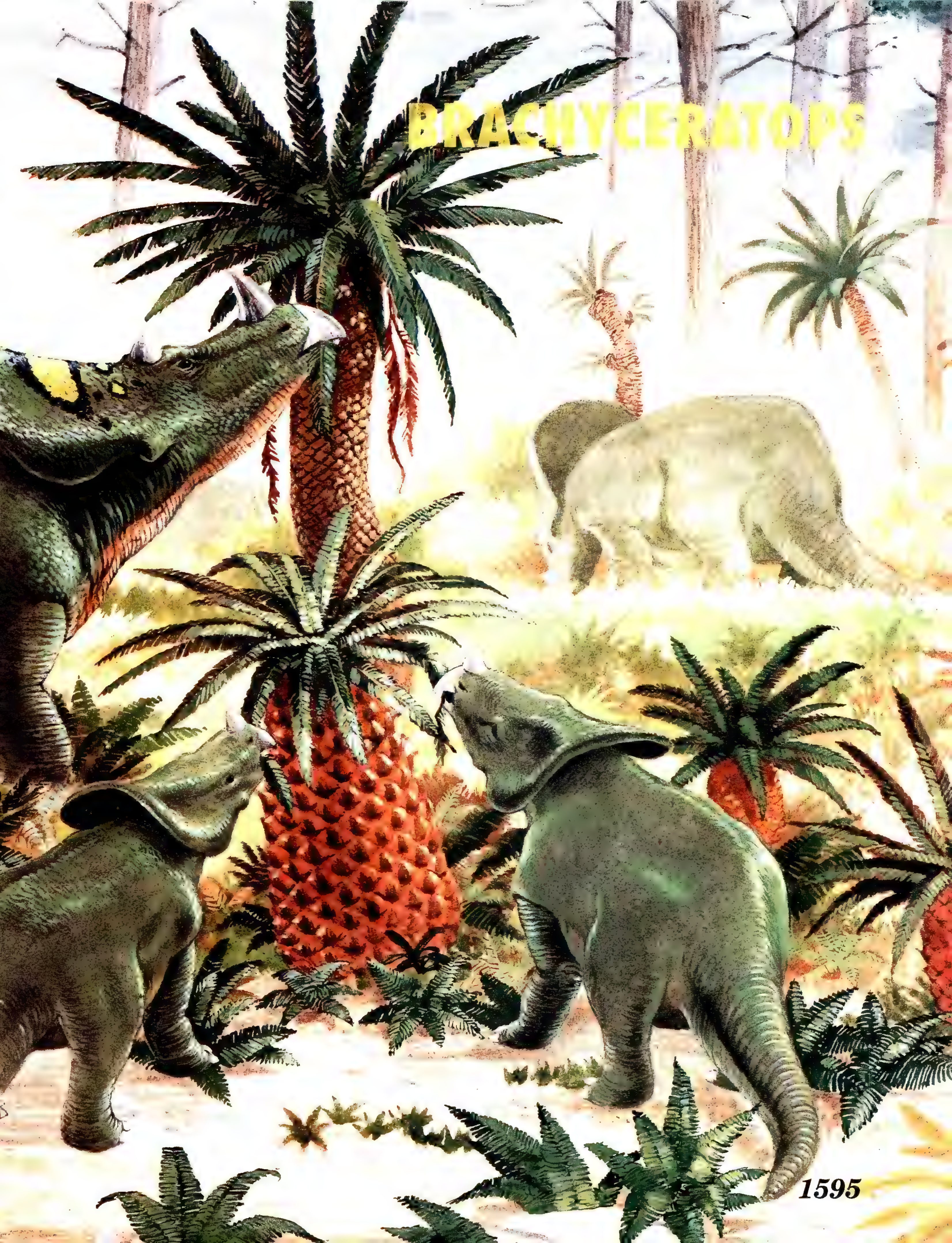
By the end of the Pliocene Epoch, 2 million years ago, there were several types of walrus. But only one survives today. The true seals are a success story in recent evolution. There are 19 species of seal today including the rarest, which is the Mediterranean monk seal.

GIANTS OF THE PAST



A herd of *Brachyceratops* peacefully grazes in the lush, swampy forests of North America. The herd tries to stay close together whenever possible to stop the weak and vulnerable members being picked off by predators. If a predator attacks, the adults will defend. They lower their heads to display their enormous neck frills and frighten the attackers away. If this fails, they can attack with their sharp horns.

BRACHYCERATOPS



3-D Gallery

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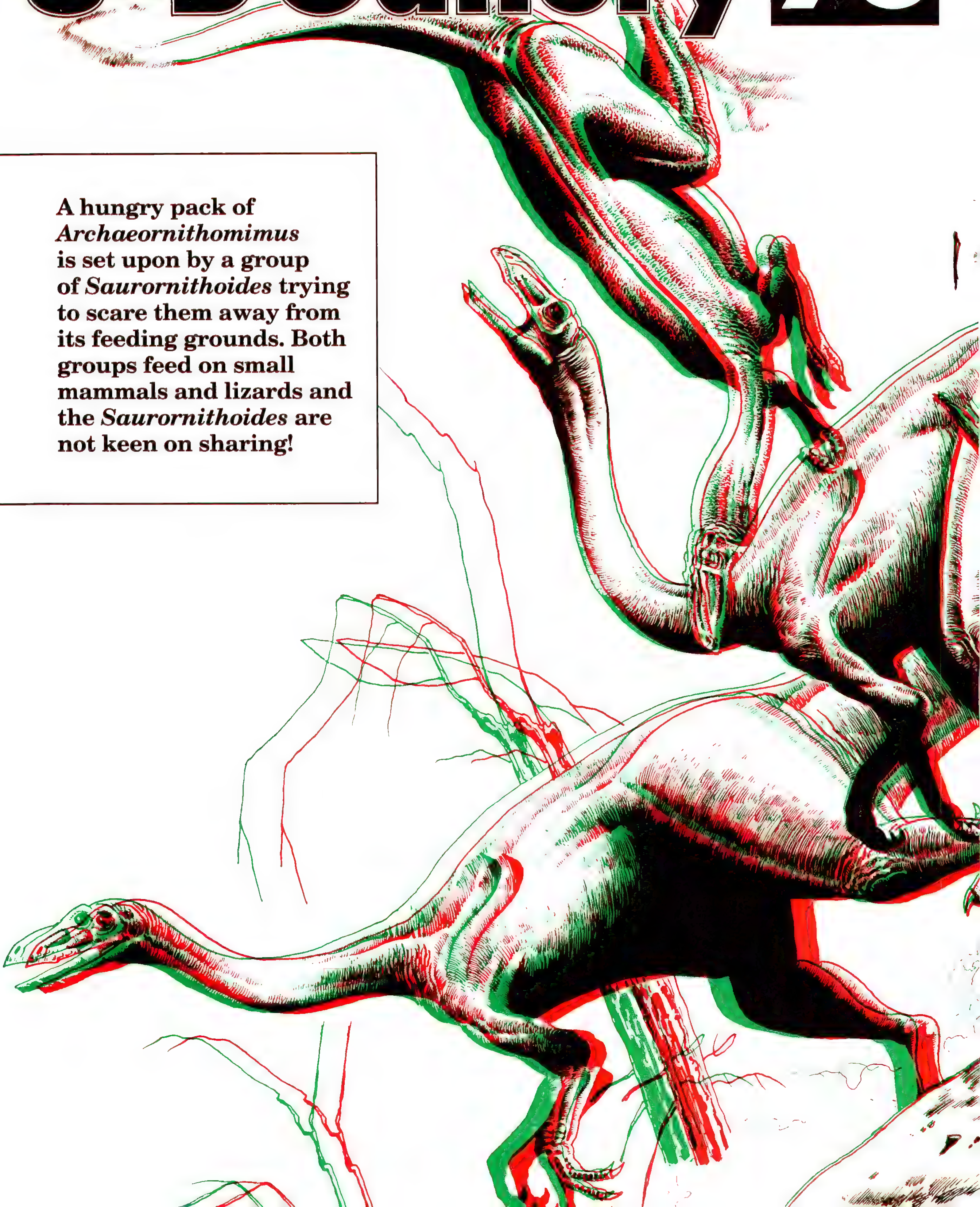
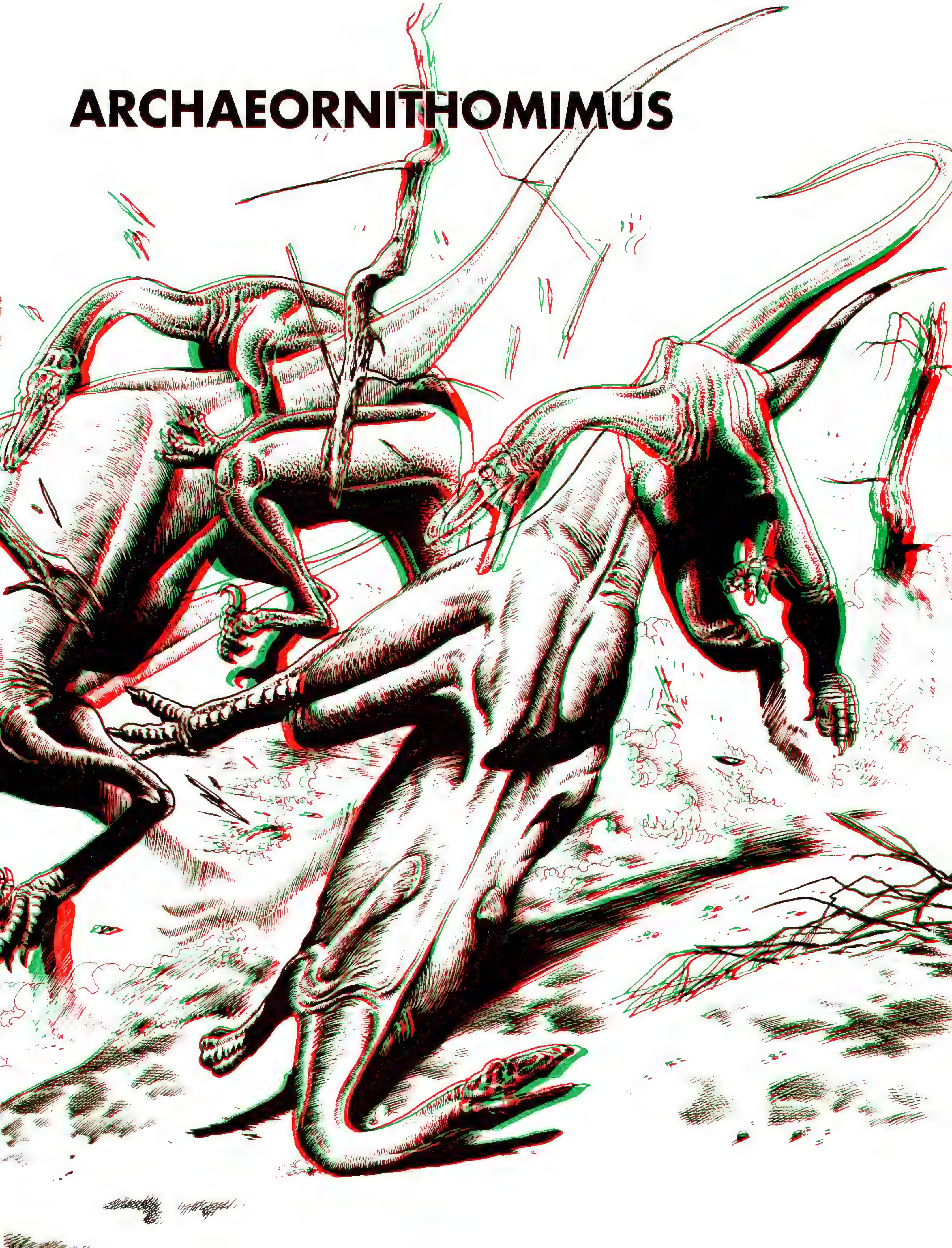
A hungry pack of *Archaeornithomimus* is set upon by a group of *Saurornithoides* trying to scare them away from its feeding grounds. Both groups feed on small mammals and lizards and the *Saurornithoides* are not keen on sharing!



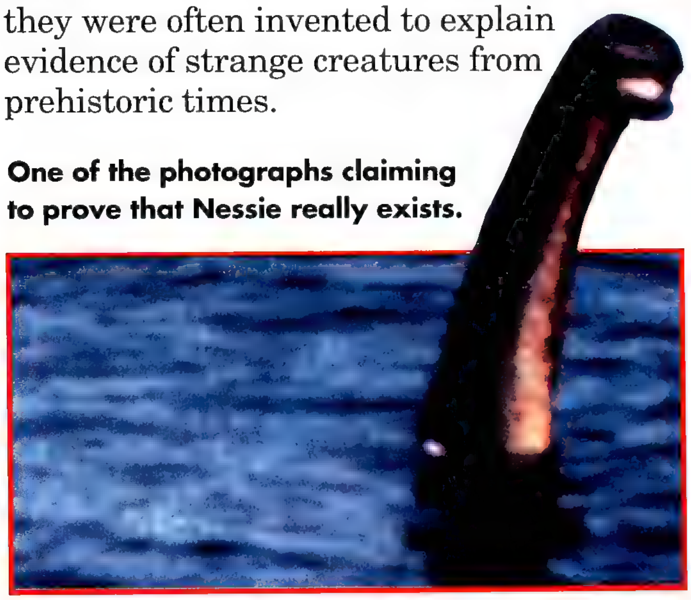
ARCHAEORNITHOMIMUS



Giants and Monsters

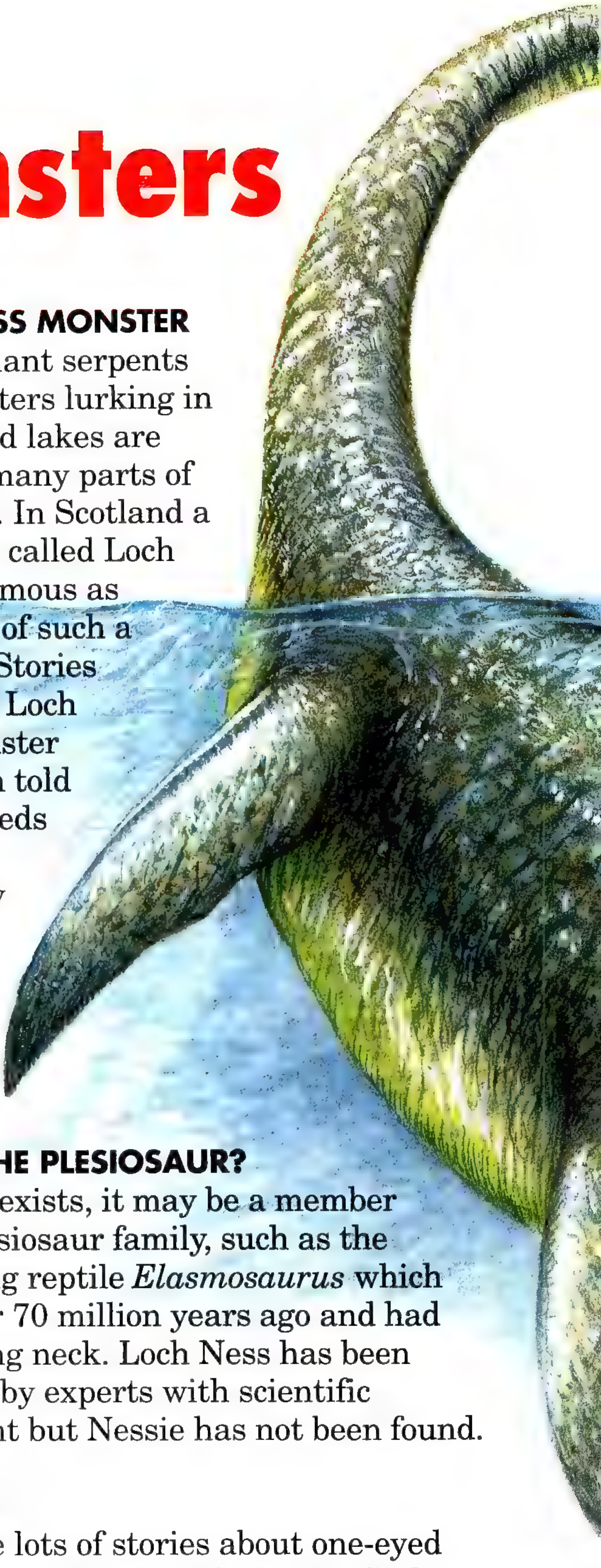
Amazing prehistoric animals inspired many myths and legends.

Spellbinding stories about mythical animals have thrilled people for centuries. The monsters and the stories told about them may not be real, but they can have a grain of truth in them. This is because they were often invented to explain evidence of strange creatures from prehistoric times.



One of the photographs claiming to prove that Nessie really exists.

A unicorn is like a horse but it has a long horn in the middle of its head.



LOCH NESS MONSTER

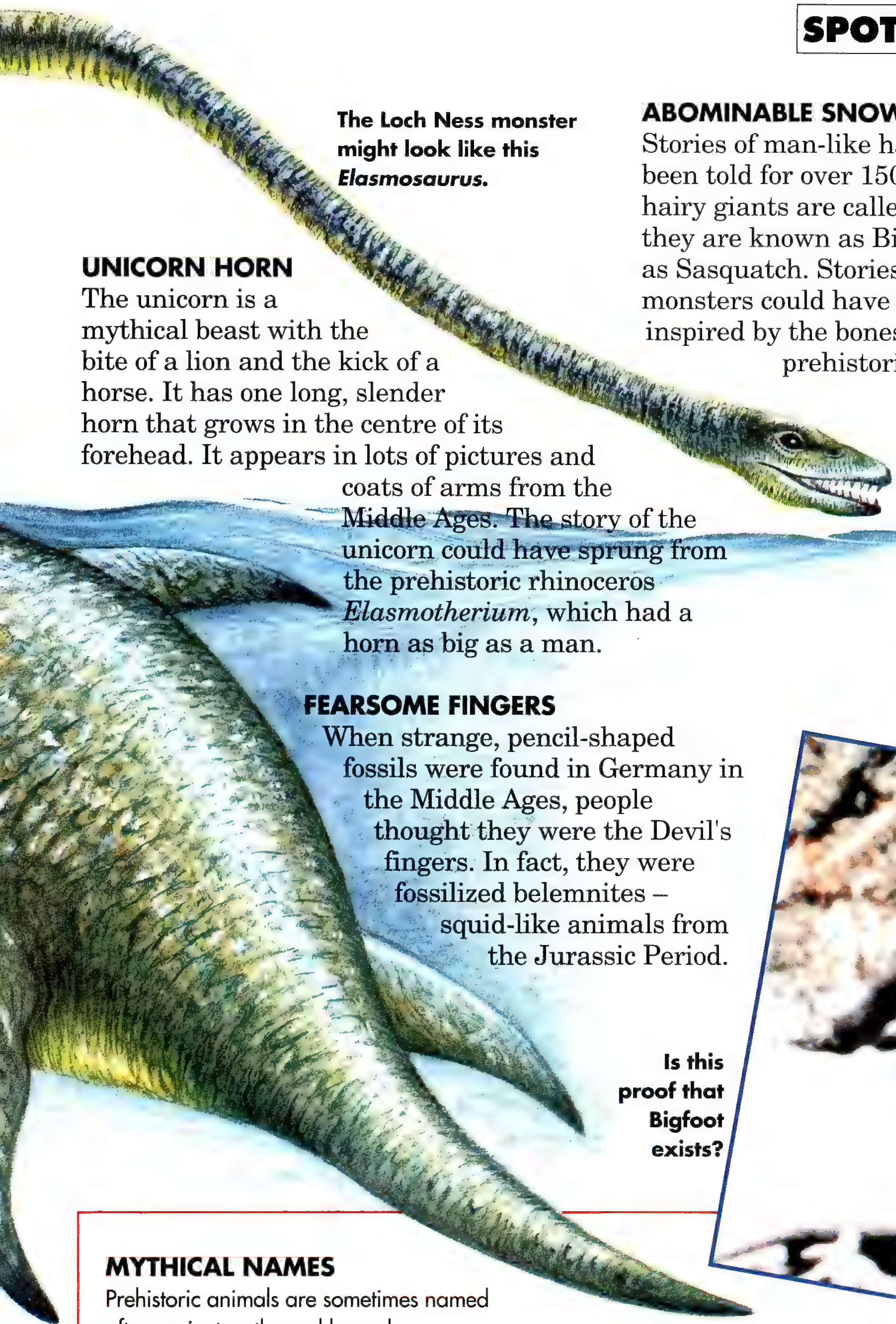
Tales of giant serpents and monsters lurking in oceans and lakes are found in many parts of the world. In Scotland a huge lake called Loch Ness is famous as the home of such a monster. Stories about the Loch Ness monster have been told for hundreds of years and many people claim to have seen 'Nessie'.

NESSIE THE PLESIOSAUR?

If Nessie exists, it may be a member of the plesiosaur family, such as the fish-eating reptile *Elasmosaurus* which lived over 70 million years ago and had a very long neck. Loch Ness has been searched by experts with scientific equipment but Nessie has not been found.

ONE EYE

There are lots of stories about one-eyed giants. One of the most famous is Cyclops – a giant shepherd who ate humans. People may have thought this fearsome monster existed when they found huge mammoth skulls. Mammoth skulls have a hole in the centre where the trunk joins the skull. It looks like a giant eye socket!



The Loch Ness monster might look like this *Elasmosaurus*.

ABOMINABLE SNOWMEN

Stories of man-like hairy creatures have been told for over 150 years. In Asia these hairy giants are called Yeti; in the USA they are known as Bigfoot; and in Canada as Sasquatch. Stories of these monsters could have been inspired by the bones of giant prehistoric apes.

UNICORN HORN

The unicorn is a mythical beast with the bite of a lion and the kick of a horse. It has one long, slender horn that grows in the centre of its forehead. It appears in lots of pictures and coats of arms from the Middle Ages. The story of the unicorn could have sprung from the prehistoric rhinoceros *Elasmotherium*, which had a horn as big as a man.

Are these the Devil's fingers or some fossils?

FEARSOME FINGERS

When strange, pencil-shaped fossils were found in Germany in the Middle Ages, people thought they were the Devil's fingers. In fact, they were fossilized belemnites – squid-like animals from the Jurassic Period.

Is this proof that Bigfoot exists?

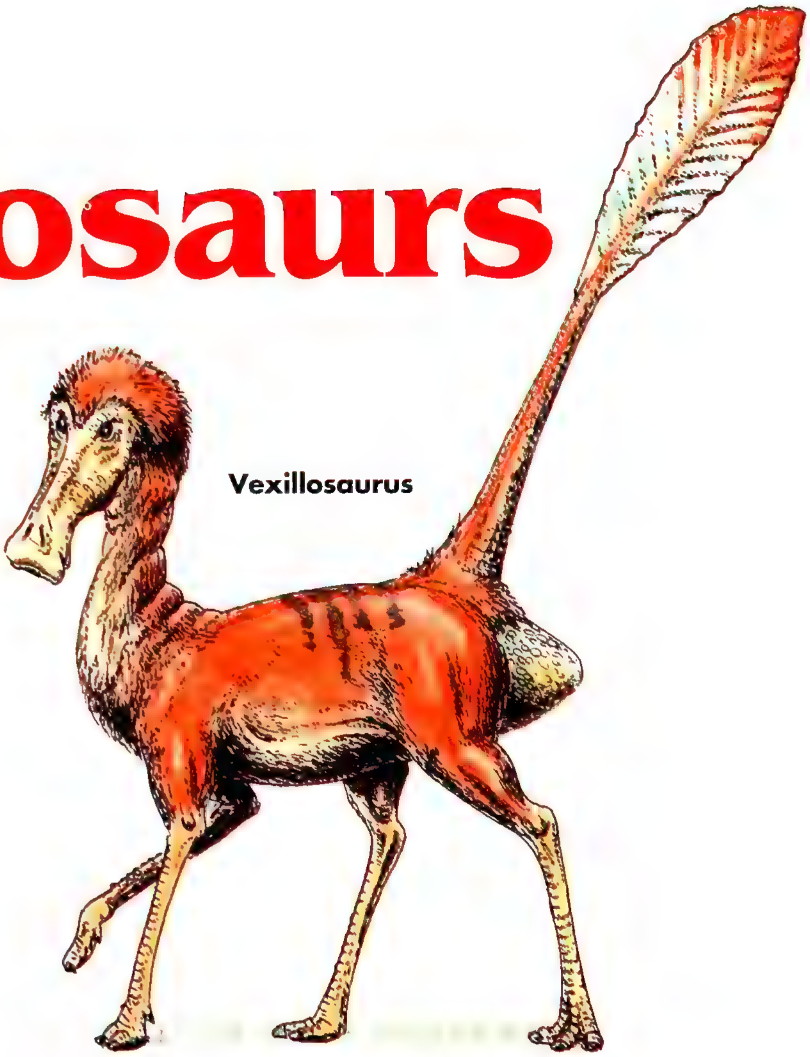
MYTHICAL NAMES

Prehistoric animals are sometimes named after ancient myths and legends.

- *Icaronycteris* – a bat that lived 50 million years ago, named after a boy in a Greek legend. Icarus made wings from feathers and wax. When he flew too near the sun, the wax melted and he fell to the ground.
- *Quetzalcoatlus* – a huge pterosaur, which was named after the Aztec god of the air, Quetzalcoatl.
- *Ramapithecus* – a monkey-sized tree-dweller. It was named after Rama, a hero from Indian mythology.

The dinosaurs today

If the dinosaurs had survived they would have continued to evolve. What would they be like today?

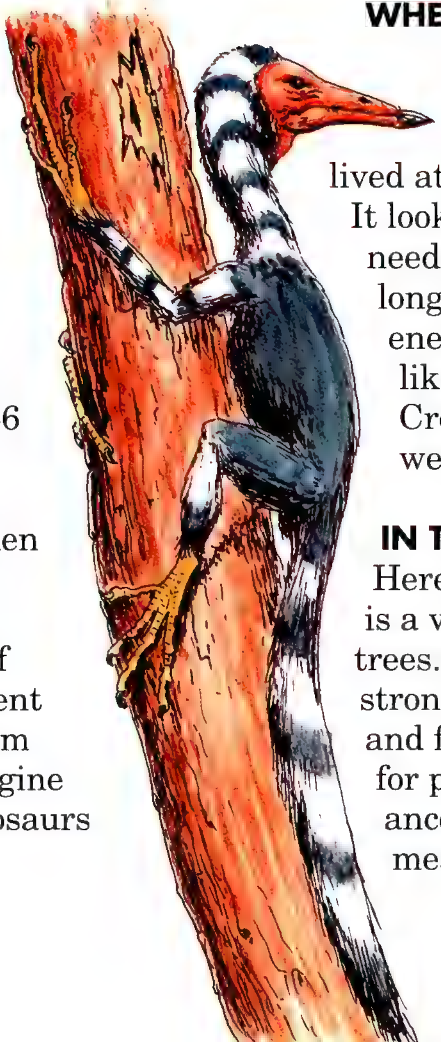


Vexillosaurus

In the Triassic Period there were dinosaurs such as *Plateosaurus*, *Coelophysis* and *Melanorosaurus*. The world changed and in the Jurassic Period there were different dinosaurs such as *Apatosaurus*, *Stegosaurus* and *Allosaurus*. In the Cretaceous Period there were dinosaurs such as *Triceratops*, *Iguanodon* and *Tyrannosaurus*. But 66 million years ago, in the Cretaceous Period, the dinosaurs all died out.

AN IMAGINARY MODERN WORLD

But let's imagine that the dinosaurs did not die out 66 million years ago. What would they look like now? The changes that have taken place on the Earth during the past 66 million years mean that the dinosaurs of today would be very different from any that we know from the fossils. Let's try to imagine the way some of these dinosaurs would have evolved.



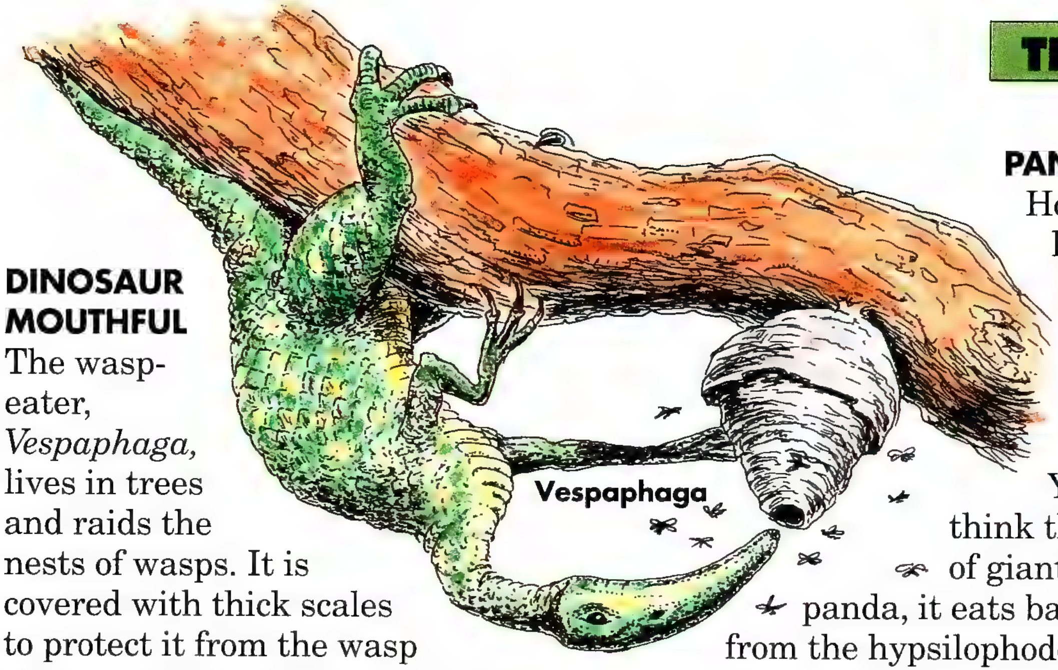
Picusaurus

WHERE THE DINOSAURS ROAM

Look at the sprintosaur, *Vexillosaurus*. This evolved from the duckbilled dinosaurs that lived at the end of the Cretaceous Period. It looks a bit like a modern antelope. It needs strong teeth to chew grass and long legs for running away from its enemies. There were no dinosaurs like this in the Triassic, Jurassic or Cretaceous Periods because there were no grasslands then.

IN THE TREES

Here is a nauger called *Picusaurus*. It is a very small dinosaur that lives in trees. It looks like a woodpecker, with strong toes for clinging to the wood and front teeth that form a sharp point for pecking into tree trunks. Its ancestors were small, two-footed, meat-eating dinosaurs.



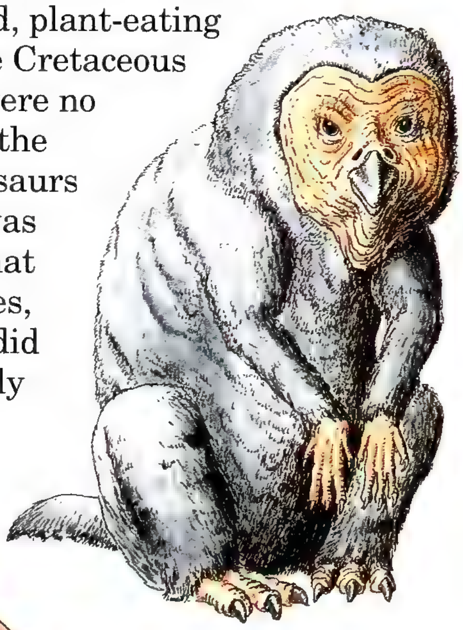
Vespaphaga

DINOSAUR MOUTHFUL

The wasp-eater, *Vespaphaga,* lives in trees and raids the nests of wasps. It is covered with thick scales to protect it from the wasp stings and its mouth is a long tube that can reach into the wasps' nest and feed on the grubs. There were no wasp-eating dinosaurs in the Age of the Dinosaurs because the wasps did not evolve until the end of the Cretaceous Period.

PANDASAUR

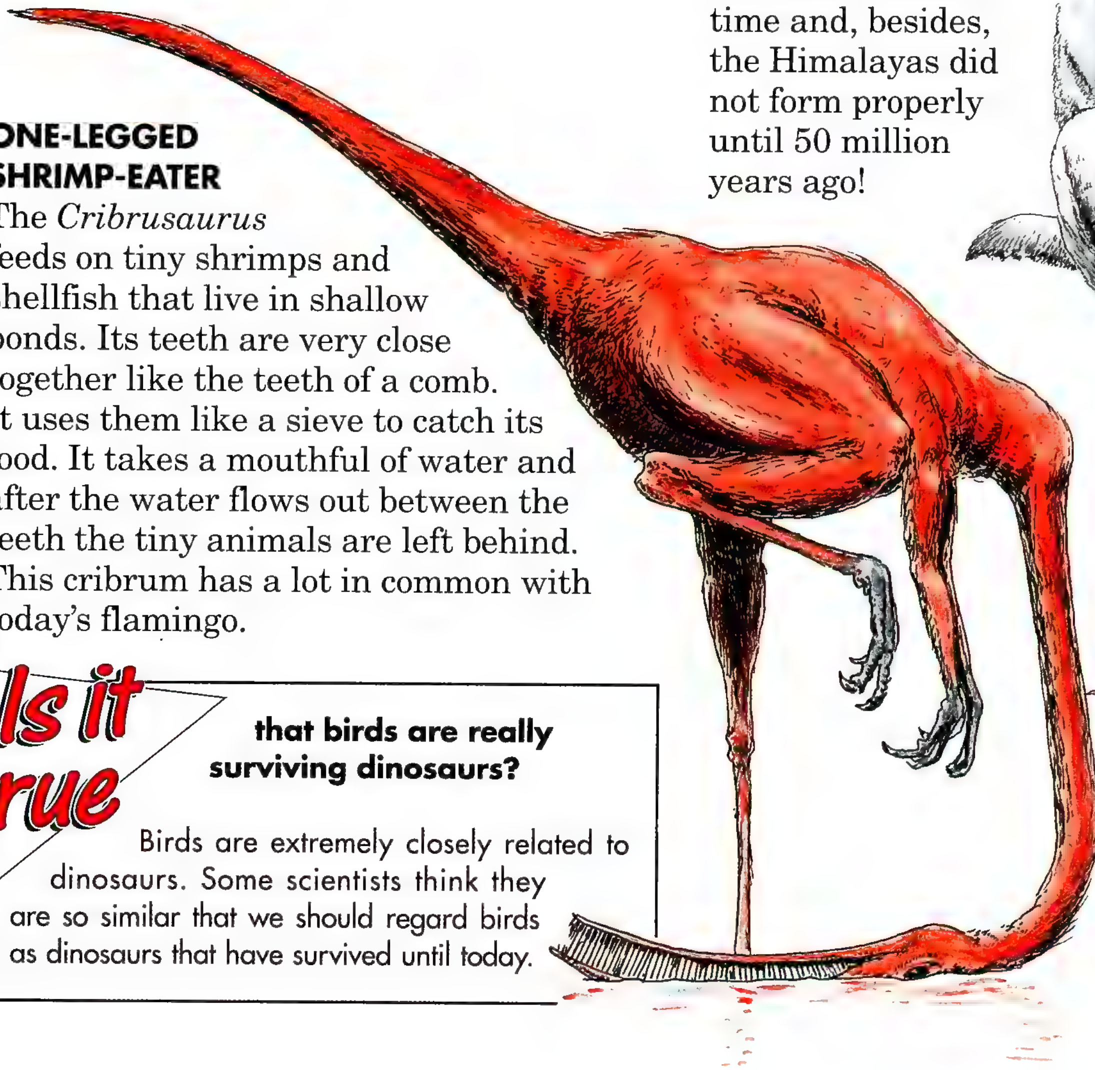
How about mountain-living dinosaurs? Up in the Himalayas there is a dinosaur called a *Multipollex*, which is a type of taddey. You would almost think that it was some kind of giant panda. Like the panda, it eats bamboo. It evolved from the hypsilophodonts – the swift, two-footed, plant-eating dinosaurs of the Cretaceous Period. There were no taddeys during the Age of the Dinosaurs because there was no bamboo at that time and, besides, the Himalayas did not form properly until 50 million years ago!

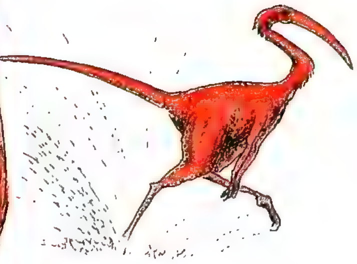


Multipollex

ONE-LEGGED SHRIMP-EATER

The *Cribrusaurus* feeds on tiny shrimps and shellfish that live in shallow ponds. Its teeth are very close together like the teeth of a comb. It uses them like a sieve to catch its food. It takes a mouthful of water and after the water flows out between the teeth the tiny animals are left behind. This cribrum has a lot in common with today's flamingo.





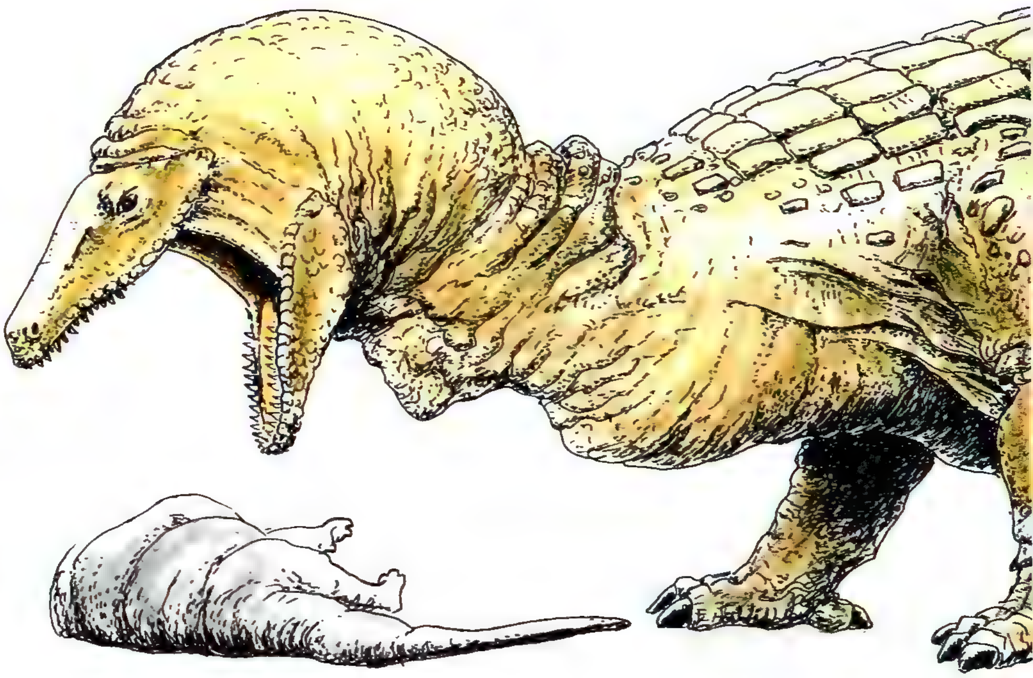
Cribrusaurus

Is it true that birds are really surviving dinosaurs?

Birds are extremely closely related to dinosaurs. Some scientists think they are so similar that we should regard birds as dinosaurs that have survived until today.

THE BIGGEST MEAT-EATER

Remember how the meat-eaters evolved in Cretaceous times? They became bigger and bigger and their forelimbs became smaller and smaller. Just take a look at *Tyrannosaurus rex*. If these meat-eaters had survived after the Cretaceous Period, we might have ended up with something like the gourmand. *Ganeosaurus*, a type of gourmand, is an enormous meat-eater which is 17m long and weighs 15 tonnes. Its forelimbs have vanished.

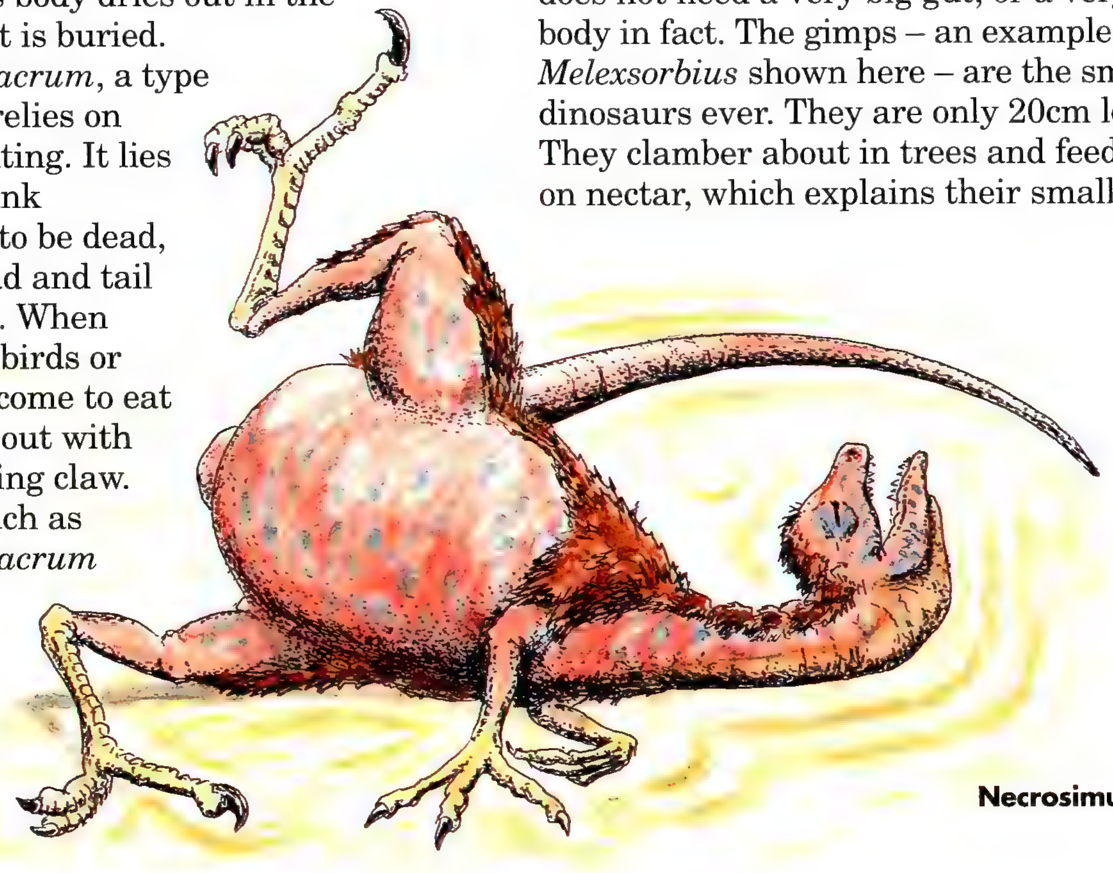


CUNNING HUNTER

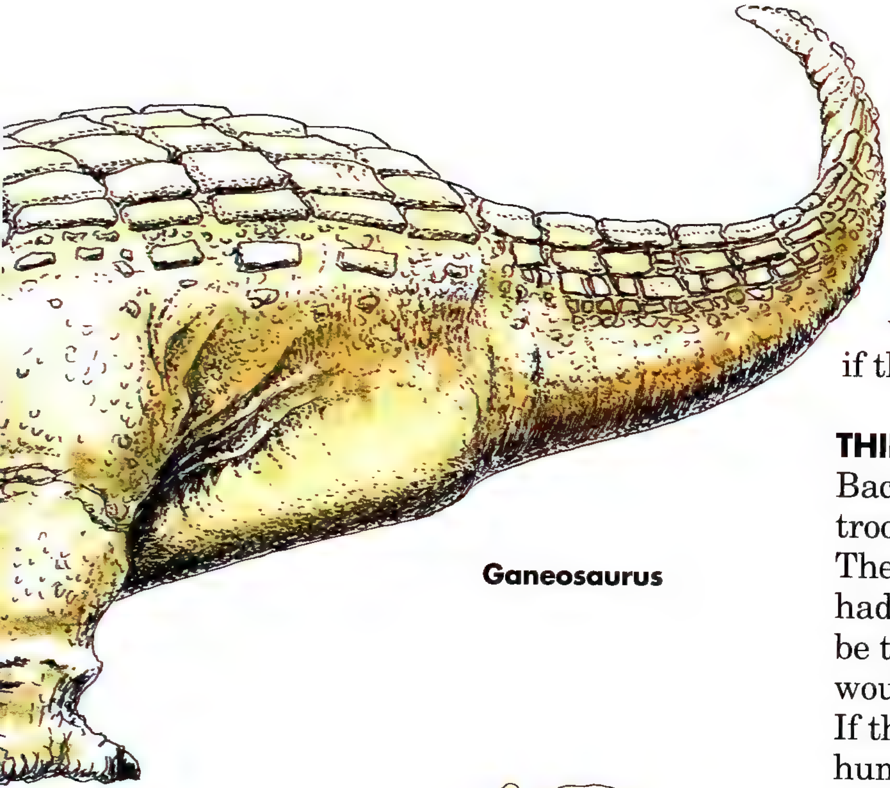
When you look at a dinosaur fossil, you will notice that the back is usually curved, with the head and tail pulled towards each other. This is what happens when a dinosaur's body dries out in the sun before it is buried. *Necrosimulacrum*, a type of springe, relies on this for hunting. It lies on a mudbank pretending to be dead, with its head and tail pulled back. When scavenging birds or pterosaurs come to eat it, it lashes out with its long killing claw. Springes such as *Necrosimulacrum* evolved from the vicious-clawed troodonts.

SWEET TOOTH

Nectar, the sugary substance produced in flowers, is a food that does not need much digesting. Any animal that eats nectar does not need a very big gut, or a very big body in fact. The gimps – an example is the *Melexsorbius* shown here – are the smallest dinosaurs ever. They are only 20cm long. They clamber about in trees and feed only on nectar, which explains their small size.



Necrosimulacrum



Ganeosaurus

Melexsorbius

DUMB DINOS

None of these imaginary dinosaurs is very clever. Springes are cunning hunters, but are not really intelligent. It could be that there would be intelligent dinosaurs by now if the dinosaurs had not died out.

THINKING TROODONTS

Back in the Cretaceous Period the troodonts were quite cunning hunters. They had big brains, for dinosaurs, and had hands that could grip things. It could be that now, 66 million years later, they would have evolved into intelligent beings. If they had, they would look rather like humans, standing on two legs and with a big round head to house the brain.

ALL IN THE MIND

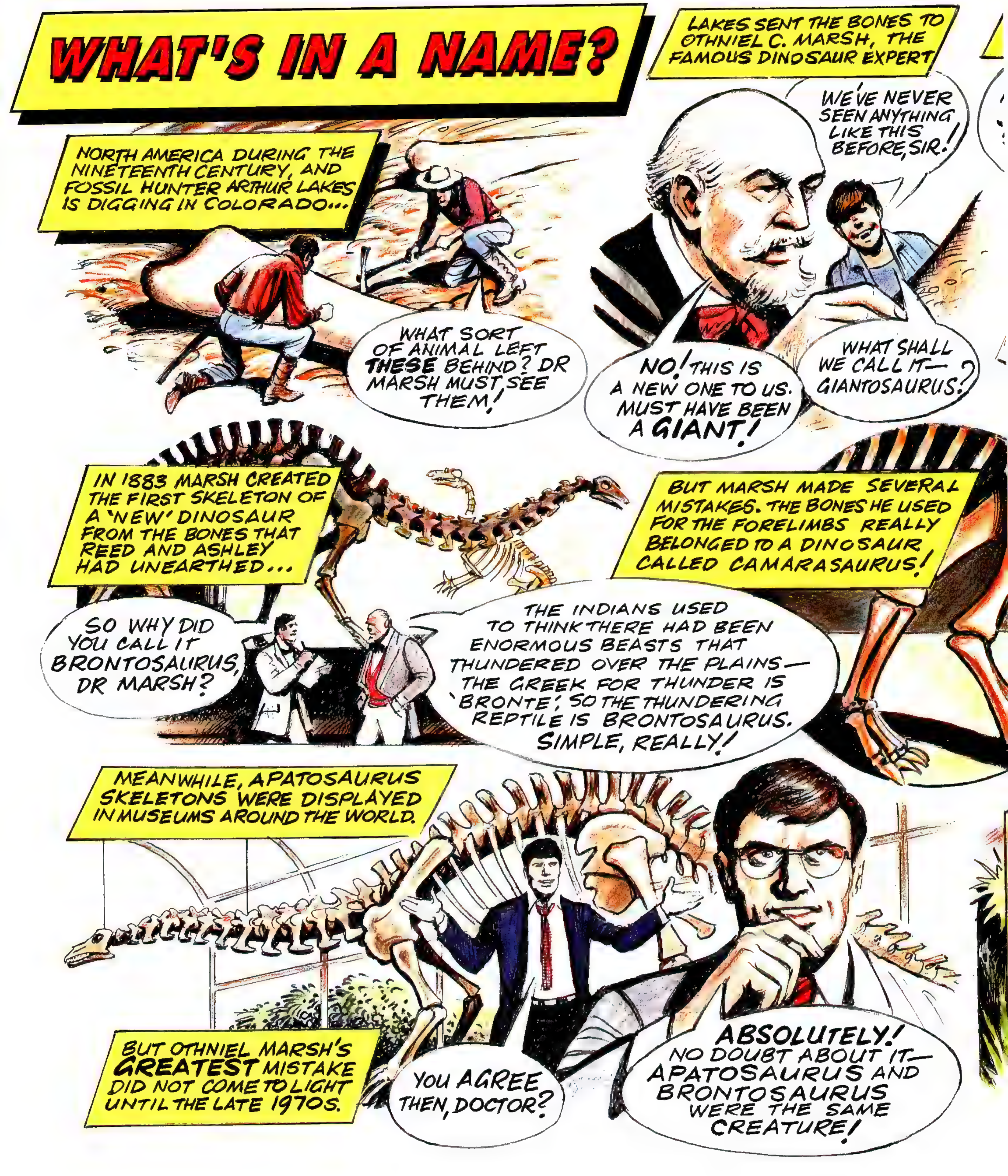
All these creatures are, of course, imaginary. There are no dinosaurs today, but it is fun to think about what they would look like if there were. Think about it yourself, and see what kind of imaginary modern dinosaur you can dream up.

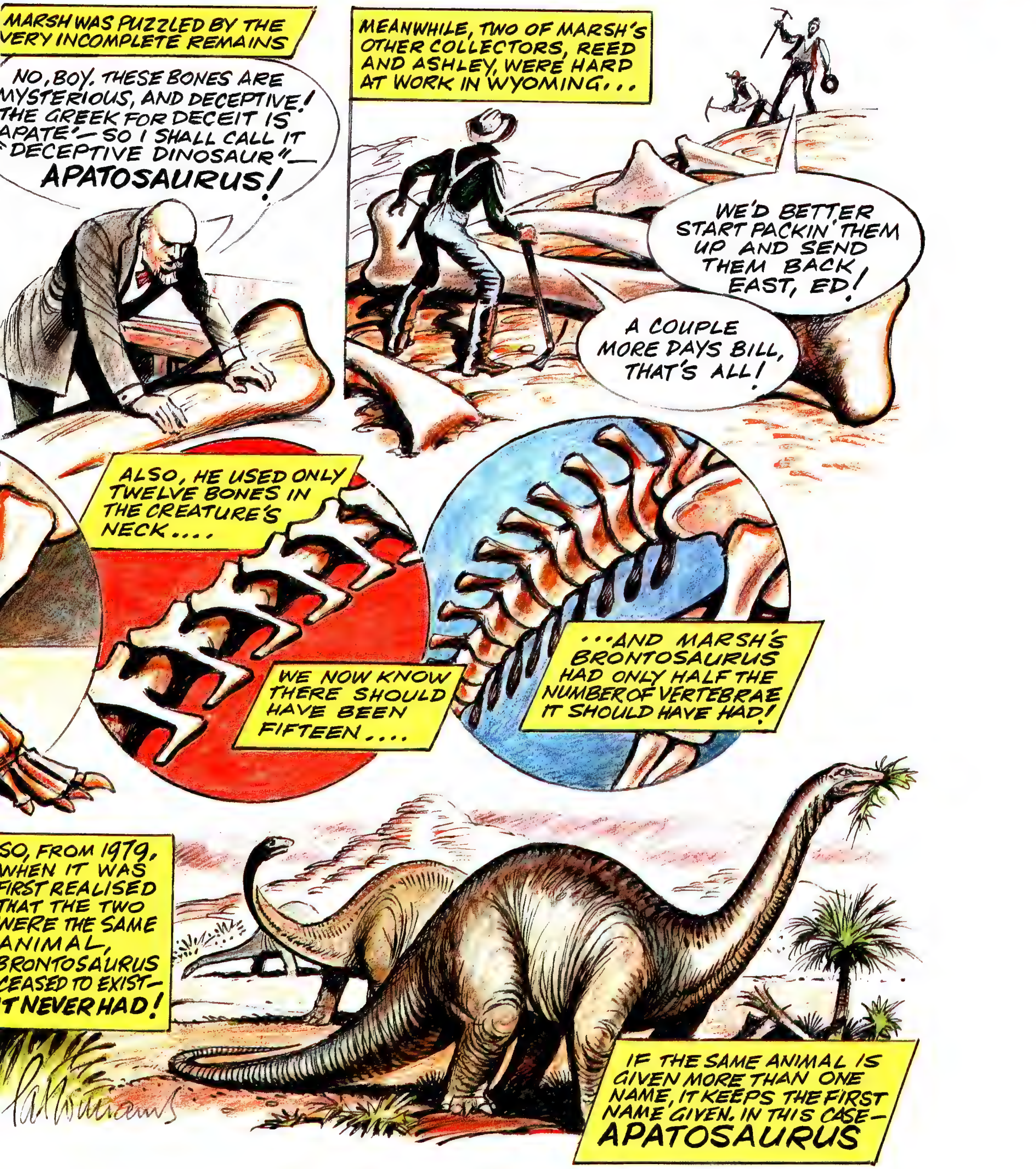
IT'S A FACT

THAT WE WOULD NOT BE HERE IF THE DINOSAURS HAD NOT DIED OUT

If the dinosaurs had not died out at the end of the Cretaceous Period, the world would be a very different place today. Mammals, including ourselves, were able to evolve as they did precisely because the dinosaurs became extinct.

WHAT'S IN A NAME?

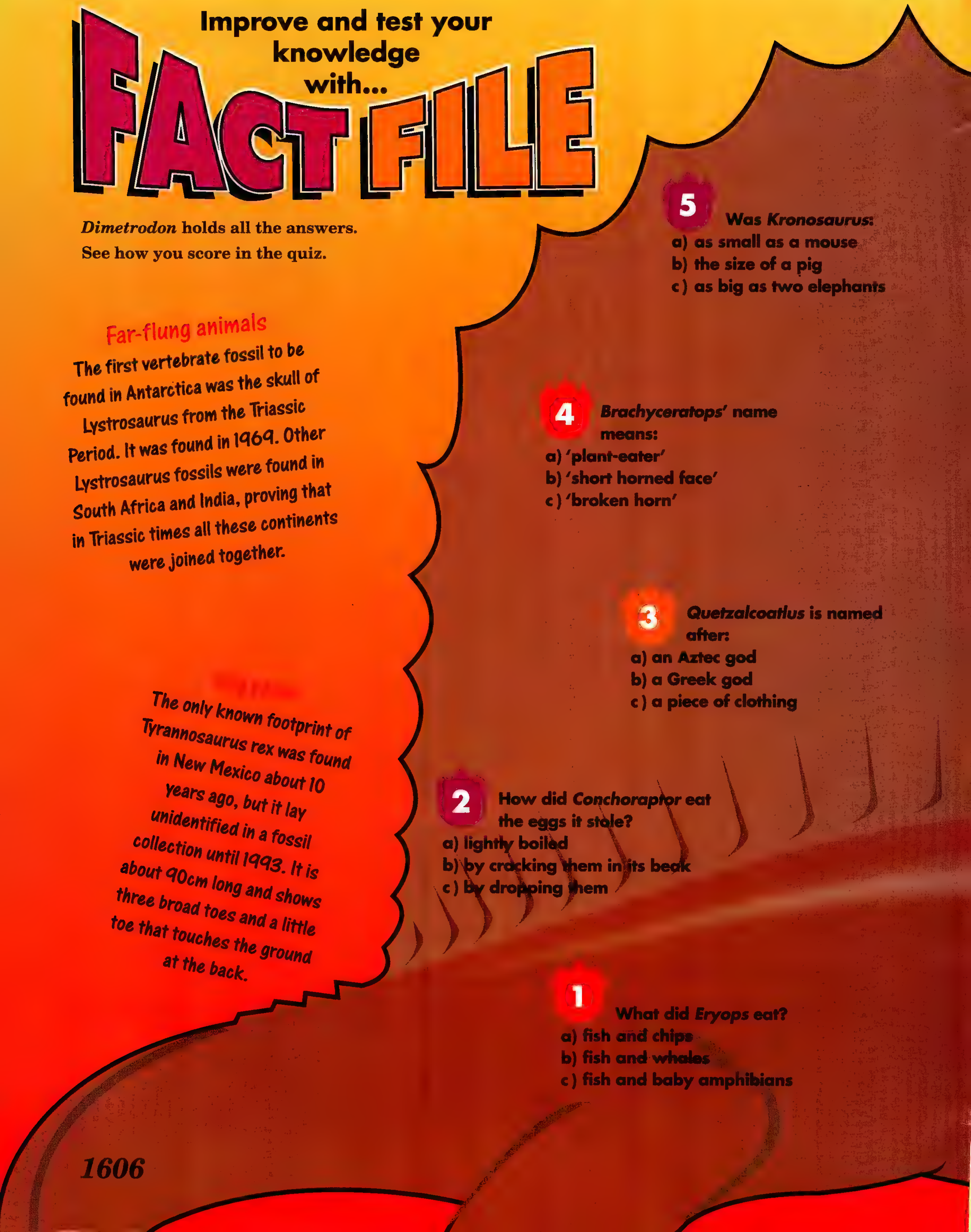

NORTH AMERICA DURING THE NINETEENTH CENTURY, AND FOSSIL HUNTER ARTHUR LAKES IS DIGGING IN COLORADO...
WHAT SORT OF ANIMAL LEFT THESE BEHIND? DR MARSH MUST SEE THEM!
LAKES SENT THE BONES TO OTHNIEL C. MARSH, THE FAMOUS DINOSAUR EXPERT
WE'VE NEVER SEEN ANYTHING LIKE THIS BEFORE, SIR!
NO! THIS IS A NEW ONE TO US. MUST HAVE BEEN A GIANT!
WHAT SHALL WE CALL IT— GIANTOSAURUS?
IN 1883 MARSH CREATED THE FIRST SKELETON OF A 'NEW' DINOSAUR FROM THE BONES THAT REED AND ASHLEY HAD UNEARTHED...
BUT MARSH MADE SEVERAL MISTAKES. THE BONES HE USED FOR THE FORELIMBS REALLY BELONGED TO A DINOSAUR CALLED CAMARASAURUS!
SO WHY DID YOU CALL IT BRONTOSAURUS, DR MARSH?
THE INDIANS USED TO THINK THERE HAD BEEN ENORMOUS BEASTS THAT THUNDERED OVER THE PLAINS— THE GREEK FOR THUNDER IS 'BRONTE', SO THE THUNDERING REPTILE IS BRONTOSAURUS. SIMPLE, REALLY!
MEANWHILE, APATOSAURUS SKELETONS WERE DISPLAYED IN MUSEUMS AROUND THE WORLD.
BUT OTHNIEL MARSH'S GREATEST MISTAKE DID NOT COME TO LIGHT UNTIL THE LATE 1970S.
YOU AGREE THEN, DOCTOR?
ABSOLUTELY! NO DOUBT ABOUT IT— APATOSAURUS AND BRONTOSAURUS WERE THE SAME CREATURE!


MARSH WAS PUZZLED BY THE VERY INCOMPLETE REMAINS
NO, BOY. THESE BONES ARE MYSTERIOUS, AND DECEPTIVE! THE GREEK FOR DECEIT IS APATE' — SO I SHALL CALL IT "DECEPTIVE DINOSAUR" — APATOSAURUS!
MEANWHILE, TWO OF MARSH'S OTHER COLLECTORS, REED AND ASHLEY, WERE HARD AT WORK IN WYOMING...
WE'D BETTER START PACKIN' THEM UP AND SEND THEM BACK EAST, ED!
A COUPLE MORE DAYS BILL, THAT'S ALL!
ALSO, HE USED ONLY TWELVE BONES IN THE CREATURE'S NECK....
WE NOW KNOW THERE SHOULD HAVE BEEN FIFTEEN....
...AND MARSH'S BRONTOSAURUS HAD ONLY HALF THE NUMBER OF VERTEBRAE IT SHOULD HAVE HAD!
SO, FROM 1979, WHEN IT WAS FIRST REALISED THAT THE TWO WERE THE SAME ANIMAL, BRONTOSAURUS CEASED TO EXIST— T NEVER HAD!
IF THE SAME ANIMAL IS GIVEN MORE THAN ONE NAME, IT KEEPS THE FIRST NAME GIVEN. IN THIS CASE— APATOSAURUS

Improve and test your knowledge with...

FACT FILE

Dimetrodon holds all the answers. See how you score in the quiz.



Far-flung animals

The first vertebrate fossil to be found in Antarctica was the skull of Lystrosaurus from the Triassic Period. It was found in 1969. Other Lystrosaurus fossils were found in South Africa and India, proving that in Triassic times all these continents were joined together.

[illegible]

The only known footprint of Tyrannosaurus rex was found in New Mexico about 10 years ago, but it lay unidentified in a fossil collection until 1993. It is about 90cm long and shows three broad toes and a little toe that touches the ground at the back.

5 Was *Kronosaurus*:

a) as small as a mouse
b) the size of a pig
c) as big as two elephants

4 *Brachyceratops*' name means:

a) 'plant-eater'
b) 'short horned face'
c) 'broken horn'

3 *Quetzalcoatlus* is named after:

a) an Aztec god
b) a Greek god
c) a piece of clothing

2 How did *Conchoraptor* eat the eggs it stole?

a) lightly boiled
b) by cracking them in its beak
c) by dropping them

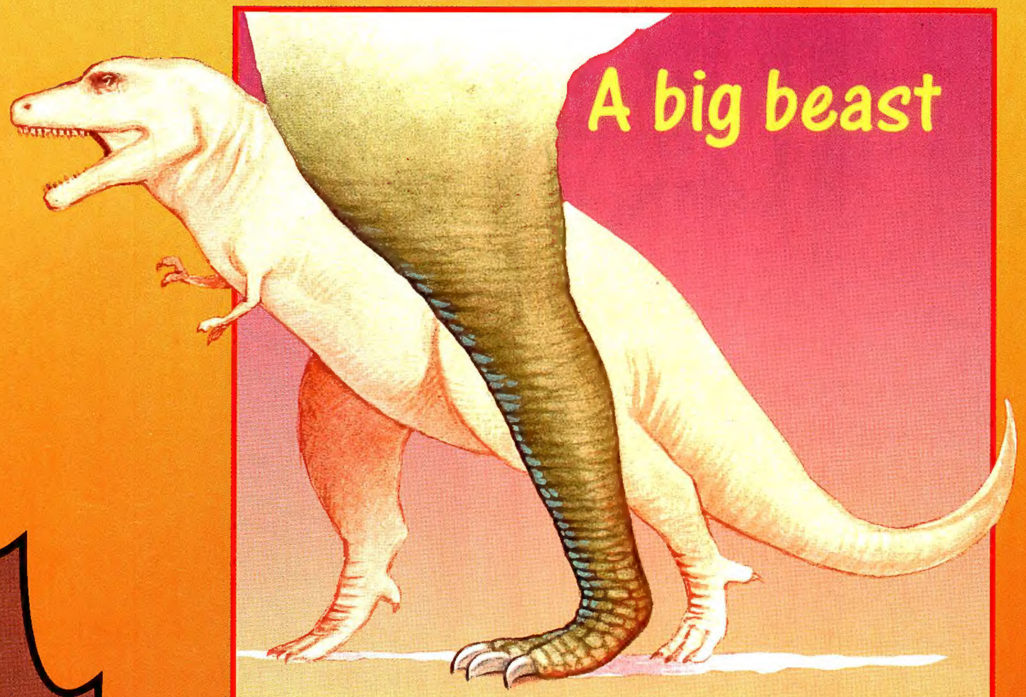
1 What did *Eryops* eat?

a) fish and chips
b) fish and whales
c) fish and baby amphibians

Rich reptile

A fossil plesiosaur found in Australia was mineralised with the semi-precious stone, opal.

A big beast



In 1989 two Indian palaeontologists found the leg bones of a gigantic meat-eating dinosaur. They called it Bruhathkayosaurus. From these leg bones, they estimate that the animal was probably 20m long and weighed twice as much as T rex.

6 **Was *Cibrum*:**
- **a) an imaginary dinosaur**
- **b) a type of seaweed**
- **c) a meat-eating bird**

7 ***Pakicetus* was:**
- **a) a swimming dinosaur**
- **b) a pterosaur**
- **c) an early whale**

8 ***Basilosaurus'* front legs evolved into:**
- **a) flippers**
- **b) flappers**
- **c) floppers**

9 **Steller's sea-cow ate:**
- **a) whales**
- **b) seaweed**
- **c) ammonites**

10 **A whale breathes through:**
- **a) its skin**
- **b) its blowhole**
- **c) its tail**

Too many skeletons

In 1993 an expedition in Wyoming ran into trouble. There were so many dinosaur skeletons that the team had to leave most of them in the ground!

Answers to the questions on inside back cover

KRONOSAURUS
120 MYA

As it swam in the Early Cretaceous seas, *Kronosaurus* (kroh-no-saw-rus) preyed on ichthyosaurs and large ammonites. Probably the largest pliosaur, *Kronosaurus* grew to be longer than two elephants, with jaws lined with 80 sharp teeth. *Kronosaurus* means 'time reptile'.

L

LEPIDOTES **180 MYA**

Lepidotes (leppi-dote-ez) was a ray-finned fish which swam in the Jurassic and Cretaceous seas. About as long as a modern cheetah, *Lepidotes* had a deep body and controlled its movements with the help of mobile fins. It had a short jaw but its mouth gaped wide to suck in food.

LYCOSUCHUS **250 MYA**

A mammal-like reptile from the middle of the Permian Period in South Africa, *Lycosuchus* (lie-koh-soo-kus) was a meat-eater with a powerful body. It was a theriodont (mammal-toothed) and shared many features with true mammals. *Lycosuchus* was longer than a leopard and walked on four strong legs.

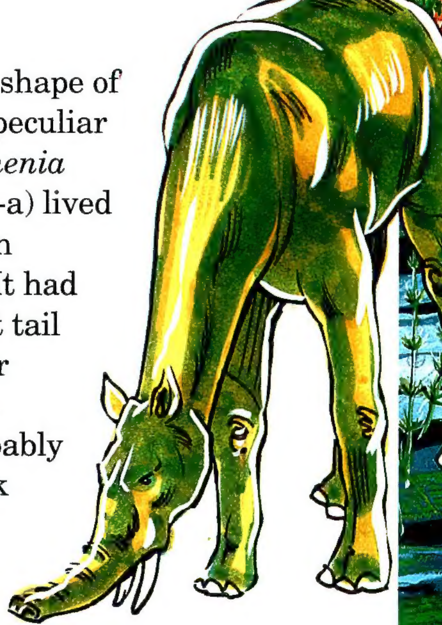
LYSTROSAURUS
220 MYA

Pig-sized *Lystrosaurus* (liss-troh-saw-rus) was probably the most common mammal-like reptile in the Early Triassic Period. It lived near lakes and rivers in South Africa, India and China. Its fossils have even been found in Antarctica, which suggests that the region was much warmer then than it is today. *Lystrosaurus* was a plant-eater with short legs and a broad body. On either side of its horny beak, it had a short tusk which was helpful for digging up roots. *Lystrosaurus* means 'shovel reptile'.

M

MACRAUCHENIA
2 MYA

About the size and shape of a camel today, the peculiar mammal *Macrauchenia* (mak-row-chee-nee-a) lived in South America in Pleistocene times. It had a long neck, a short tail and ran fast on four strong, hoofed legs. *Macrauchenia* probably used its short trunk for feeding. Its name means 'large throat'.



MYA = MILLION YEARS AGO

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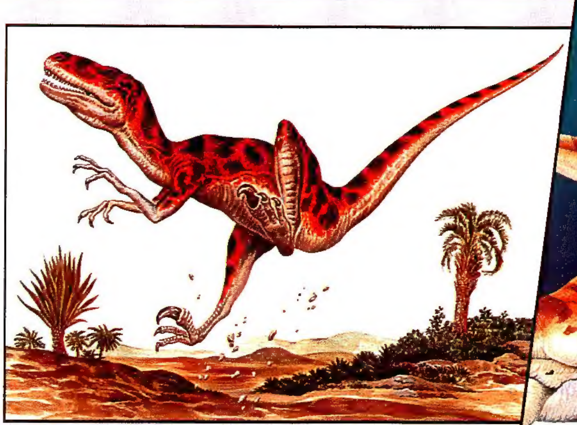

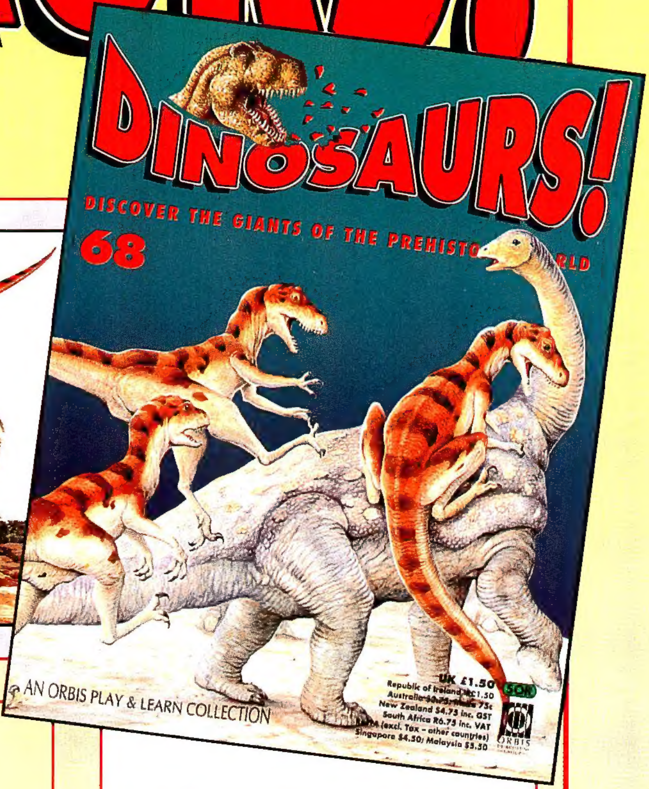
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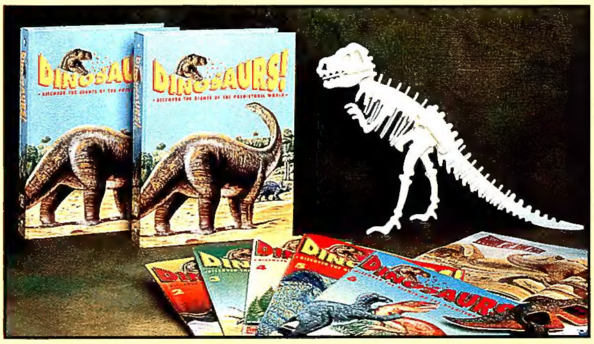

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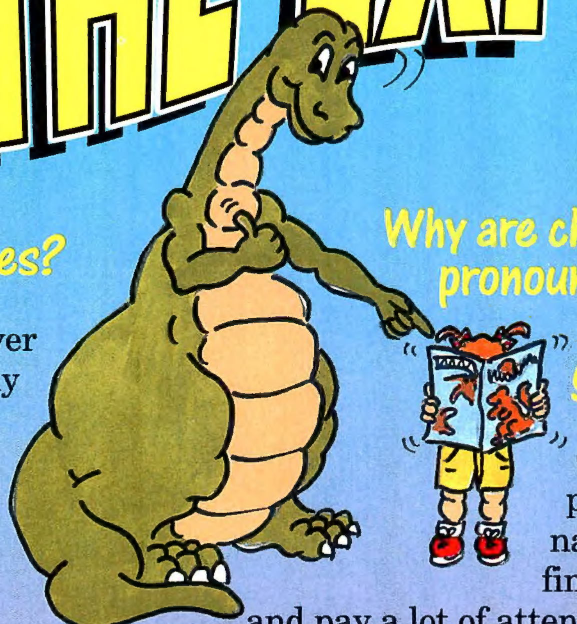
ANSWERS TO FACT FILE QUESTIONS: 1.c 2.b 3.a 4.b 5.c 6.a 7.c 8.a 9.b 10.b

Dr David Norman of Cambridge University answers your dinosaur questions

ASK THE EXPERT

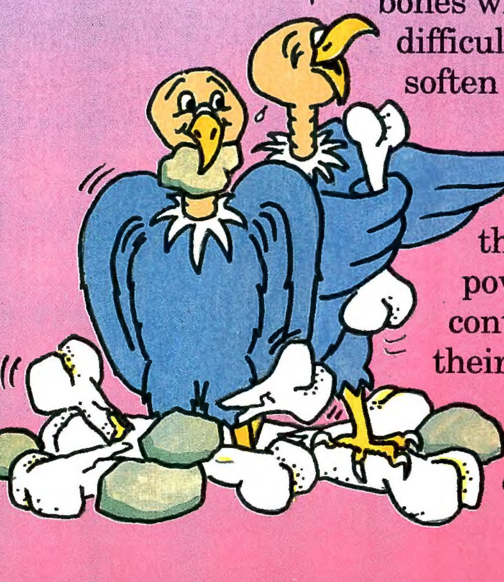


Did pterosaurs nest in trees?

It is not known if pterosaurs ever nested in trees. Pictures usually show them nesting on the ground. It seems likely that the very large pterosaurs would have made nests on the ground; nevertheless it is possible that some of the small ones, such as *Pterodactylus,* could have nested in trees. There is no evidence for nest-building in trees from the Jurassic or the Cretaceous Periods.

Vultures can use rocks to break bones. Could dinosaurs do this?

There is no evidence that dinosaurs used rocks to break up the bones of animals they had killed. Crocodiles can swallow bones with very little difficulty. They then soften them in their stomachs, before crushing them with powerful contractions of their gut muscles. Maybe this is what dinosaurs did.

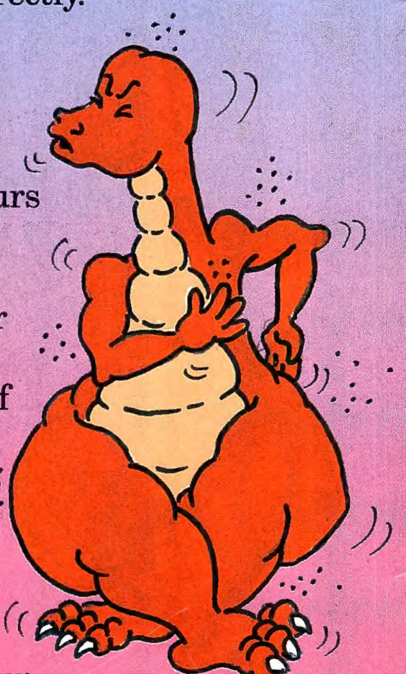


Why are children better at pronouncing dinosaur names than grown-ups?

Children are good at pronouncing dinosaur names because they find them interesting and pay a lot of attention to them. Adults usually don't bother to find out how to pronounce the names correctly.

Did dinosaurs have any parasites?

At the time of the dinosaurs there would definitely have been parasites – animals that live on other animals. Parasites would have lived on the inside of dinosaurs (in the guts or other organs) or on the outside (burrowing under the skin, between the toes or under the claws). Healthy dinosaurs, like our pets today, would not have noticed this normal 'parasite load'.



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